



Innovation through Symbiotic Supply Chains

In most organisations, the opportunities for process improvements typically take an internal focus but the time is ripe for companies to begin embracing a Symbiotic approach to their Supply Chains.

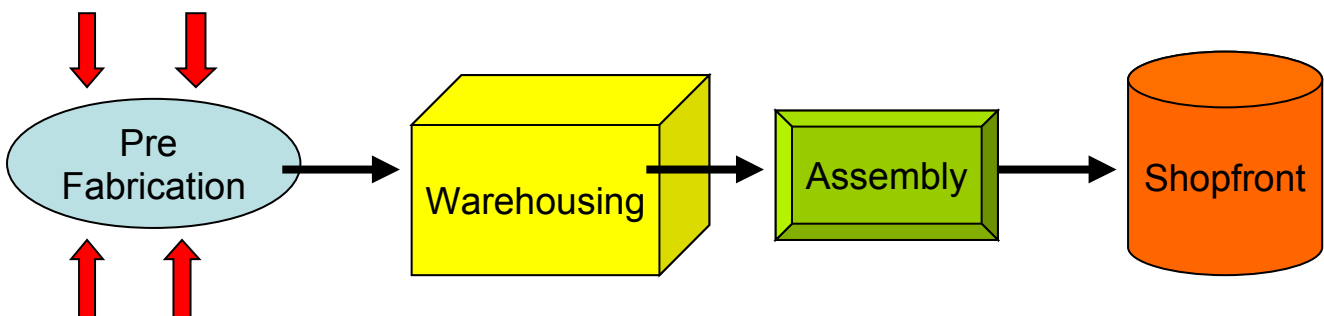
If your company applies the Six Sigma, World's Best Practise, ISO certifications or other initiative in order to identify places where it is wasting resources or expending more effort than it needs to and to then change things for the better, then you are well aware of a focus on daily process improvement.

Overwhelming those actions for improvement are aimed at the internal workings of the business, which is (one ought to be confident of assuming) where a company has the greatest control over getting what it wants. And if you continue to improve your internal business operations, you should be successful. Arguably the challenge with this approach is that the underlying belief that must exist for this process to provide ongoing value is that the business exists in isolation. In other words, providing the business does what it does the best way it can internally, all will be rosy with the world.

Yet we know such a belief is unfounded because businesses do not operate in isolation – they operate within a system. I'd encourage any business owner to continually assess the way they run their business and the many 'models of the moment' like those mentioned above, will go a long way to helping any business to improve. And right now, the focus on internal process improvements is giving way to an external focus – one in which a business looks for opportunities to Innovate the entire system of which it is a part.

The emerging area of interest for large scale operations to gain significant improvement and competitive advantage is through Innovation within their supply chains.

The Supply Chain is far more than a model of logistics – the linear step points through which a product and its components flow from initiator to the end consumer. The Supply Chain is in fact a vibrant system of interconnected activities that exists outside the typical 'command and control' management style of the normal business, even though its impact has a direct connection to the internal operations of any business. And it is an area that offers enormous opportunity for Innovation.



The diagram above is a pretty simple version of a supply chain. The vertical arrows are raw ingredient inputs (like metal, water, energy, bolts & bits etc) which are sent to a pre fabrication point. At this stage they are assembled into larger components which are shipped off to a warehousing facility somewhere else until they are called for by an assembly factory. The assembly factory might get all sorts of components from all sorts of pre fabrication points to assemble the components into a larger product which is then shipped off to a retail shop front.



From a Six Sigma or World's Best Practise perspective of business improvement, each element in the supply chain above is an individual business that would look internally to improve its own operations. This 'self focus' is the linear version of a supply chain. But for the supply chain to become a source of innovation, and significant competitive advantage, it needs to be looked at as a system – a system with an assortment of inflows and outflows.

Moving beyond the inwardly focused 'self' perspective of 'our company' means adding an additional vantage point that suggests that an ongoing internal improvement focus can only add so much to an individual business' competitive advantage. Stepping outside and considering the whole system suggests that whilst a single business might add incremental improvements to the overall supply chain it may not develop the type of resilience to shocks to the supply chain or to be able to leverage the advantage it needs to ensure its ongoing success or survival.

Taking the Supply Chain diagram above, if your company was the 'warehouse' and was deemed to be the World's Best Practise warehouse facility, your survival or success would still not be guaranteed because you rely on the upstream inputs and downstream acceptance of your outputs by other companies. And what if those companies aren't very good? What if they are vulnerable? The answer is obvious – if they aren't very good then YOU are impacted. If they are vulnerable then so are you. And the more you rely upon them to do things well in order for you to be able to do things well, the more vulnerable you are if they don't do things well.

Which is why Supply Chain Innovation offers massive potential. And it also requires an upfront and ongoing commitment to developing the external relationships throughout the supply chain.

From Linear to Systemic

As a professional futurist involved in strategy development, I'd like to suggest that one area of potential for a significant shifts in supply chain innovation will emerge through the development of 'supply chain symbiosis' - the symbiotic relationship among businesses that seek to understand that supply chains are not just about products and the components that make up those products, it is about inflows and outflows in a system. Symbiotic relationships are not complex arrangements though the system in which they exist can have a great degree of complexity. A symbiotic relationship is as simple as saying 'You scratch my back and I'll scratch yours'.

In a symbiotic business relationship the questions that need to be asked are 'Whose back can I scratch & How?' and 'Who can scratch mine and How?' The shift away from the linear view of a supply chain (much like components moving along a conveyor belt) to one in which you search for ways in which a business relationship might be formed, means that your business begins to proactively look for a way to increase your resilience to shocks to your supply chain and opportunities for competitive advantage. Start by questioning the necessity of your existing supply chain processes.

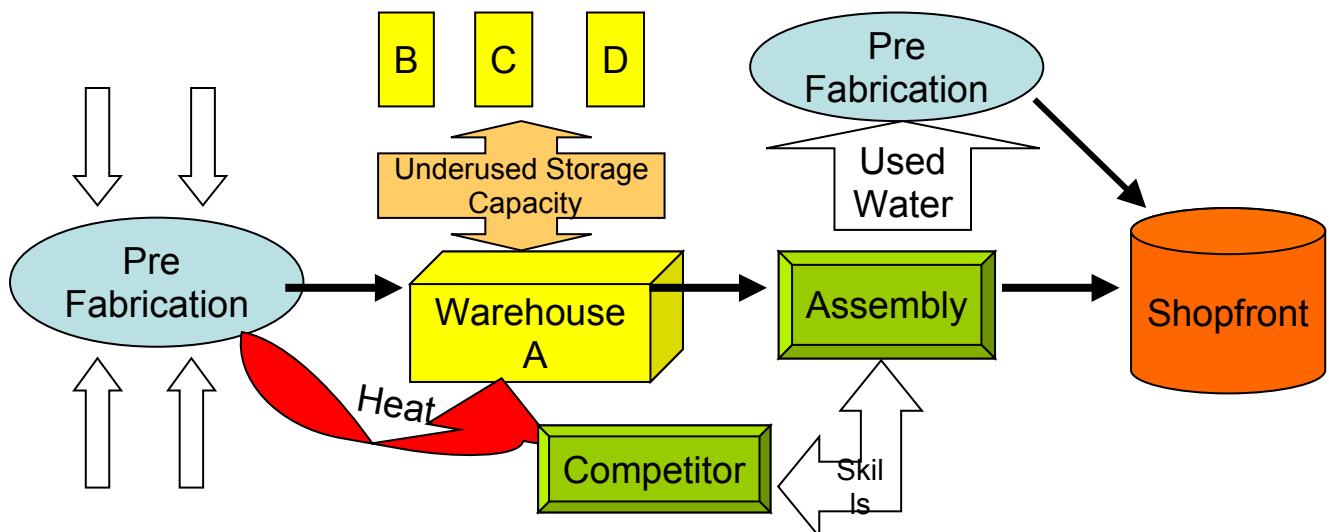
Consider the following questions for your business supply chain:

- 'What businesses or people are 'downstream' from our business and what do they rely upon us to provide for them?'
- 'What businesses or people are upstream from us and what do we rely upon them to provide for us in order to stay in business?'
- 'What waste products do we produce that might be used for those businesses or people who are down stream from us, and additionally, what other companies might be able to use our waste stream outputs as inputs for their business?'



- ‘What waste products are produced upstream of us that might be used as inputs by us? Of the ‘raw product’ inputs that we use, who might create them as a waste stream from their ordinary operations but are not part of our existing Supply Chain perspective?’

These four questions should enable you to understand the systemic nature of a supply chain and provide the means by which you can look to innovate the way you run your business. If your wastes can be used by another company as a raw input, you might significantly reduce the costs associated with disposal. Additionally the company who you give your waste to (or who buys it from you) might gain access to an input component at a greatly reduced cost from what they might otherwise have to pay. In the other direction, by considering the raw product materials you use to create your products, you might be able to identify companies that are producing those materials as part of their waste stream. Approaching them and offering to take that waste off their hands or buying it from them at a greatly reduced rate for you but greatly enhanced value for them, is developing the symbiotic ‘you scratch my back and I’ll scratch yours’ relationship. What you are likely to end up with is a much expanded perspective of your Supply Chain that may look something like this:



In the Symbiotic Supply Chain view, we see that ‘inputs’ ‘wastes’ and ‘resources’ exist beyond the typical linear supply chain model. In this supply chain businesses have asked ‘what do we produce as a by-product and who might be able to use that?’ The acceptance that some resources are likely to be shared means an understanding of the supply-demand challenges in areas like skilled staff, an opportunity to reduce actual storage capacity by absorbing underused capacity elsewhere and we see the recognition that individual elements in a single supply chain, may in fact be connected to an additional supply chain that hadn’t been previously considered.

The expanded view also enhances our perspective for identifying opportunities for Innovation for it enables us to see that everything we produce, either deliberately or as a by-product, has a potential value for someone else either within our supply chain, or supplementary to it. And if you can reduce your costs of operation by Innovating your view of the supply chain, you gain a competitive advantage whilst increasing your resilience to shocks in the system.

In fact by assessing your Symbiotic Supply Chain you might just discover that some of your waste or by-products could well lead to a new product with its own revenue stream or additional minor income source that replaces an existing cost centre.



Symbiotic Supply Chains

A great example of an Innovative approach to a Supply Chain is the firm TerraCycle Inc in the United States (www.terracycle.net). The company creates bottles of worm fertiliser using garbage (a waste stream from someone else's supply chain). This is smart enough of its own accord but the company goes one step further. Recognising that the raw inputs it required for packaging were waste stream outputs emerging at the end of other companies' supply chains, it chose not to become just another customer of a plastic bottle manufacturer. Instead Terracycle created a waste reclamation supply chain of its own that ran alongside and in conjunction to its main Supply Chain of selling organic product to end users. It pays schools and others 5c per plastic bottle sent to it.

On a much larger and more established scale is the Kalundborg Business Park in Denmark. Established in the mid 1970's, the park was arguably the first in the world to recognise that in any product producing supply chain, by-products in the form of waste heat, water and materials could be used by other companies as their raw material inputs, resulting in a reduction of waste outflows and a reduction in costs for inflows (see <http://www.indigodev.com/Kal.html>.) In the United Kingdom, NISP (the National Industrial Symbiosis Program) acts as a centre for initiating and creating symbiotic business partnerships (see <http://www.nisp.org.uk/>)

In this Symbiosis approach a key developmental requirement for the success of the project will be identifying suitable 'business clusters' that have the potential to develop effective Symbiotic Supply Chains and this is an area in which NISP in the UK has proven highly successful.

Recently VicUrban & Melbourne Water announced the development of a business park in Dandenong called 'LOGIS' (see www.vicurban.com.) Working with the CSIRO, VicUrban are aiming to create Victoria's first business park that applies symbiosis to the design and use of inputs and waste management from the ground up, using the lessons learned from sites like Kalundborg (among others) and new technologies now available in the area of energy production and waste management.

An example of such a cluster might be one that includes a Pig Farm, a Metal Fabrication Factory, a Professional Business Centre, a Garden & Produce Wholesaler and a TAFE College. The Pig farm would create methane that could be used by the metal fabricator for energy, whilst also creating fertiliser used by the Garden & Produce wholesaler who would also benefit from the waste heat created by the metal fabricator being pumped into their hot houses. Both the farm and wholesaler would generate food for people working in the factory. Some of the heat from the metal fabricator would also be pumped to the TAFE College and Professional Business Centre, both of whom provide skilled employees and professional services to the farm, wholesaler and factory, as well as keen students looking to develop their skills in Agri Businesses and Metal trades. The Professional Business Centre also acts as a source of provision of quality teachers for the students at the college. Both the college and Business centre create waste food stuffs that, along with vegetables unsuitable for sale via a supermarket, become swill and food to feed the pigs. Further the Garden and Produce Wholesaler can accept the CO2 filled air from the buildings around it, returning clean filtered air increasing the comfort of people in those buildings.

And so it could go on. Symbiotic Supply Chains expand the focus on raw inputs for products moving along a linear path to one in which all inputs and waste stream flows are considered part of your supply chain. The extensive opportunities for innovation in your supply chain and effective use of resources emerge through smarter relationships beyond the internal focus most firms now have. Models of Symbiotic Business Parks from around the world all lean towards the environmental benefits that such relationships create. In a world of increasingly environmentally aware consumers, this reason alone ought to be enough to encourage you to investigate the possibilities. But as a recent



report by Yale University shows, the economic benefits gleaned through symbiotic relationships are significant (see http://environment.yale.edu/4951/industrial_symbiosis_in_action/).

For business strategists I suggest the key benefits of Innovation through Symbiotic Supply Chains are a more resilient supply chain and a potential source of significant competitive advantage.

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Disclosure – the author has recently worked with VicUrban by giving a presentation on Symbiotic Business Parks to a business breakfast conducted by South East Networks, a development arm of the City of Greater Dandenong. Elements from that presentation have been used in this article.