

Institution: University of Surrey
Unit of Assessment: UOA 19 Business and Management Studies
Title of case study: <p style="text-align: center;">Innovative supply chain solutions; improving operational performance of fast growth companies</p>
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Development and validation of a novel supply chain model at Surrey has improved performance for fast growing companies.</p> <p>Validated with an international food manufacturer, it has been applied in a different sector with similarly promising results. Plans are in place to roll out to other companies seeking fast growth.</p> <p>Impact:</p> <ul style="list-style-type: none"> • quantified improvements in planning/control for diverse customer portfolios; • reduced inventories by 35%; • decreased stock holding by 15%; • increased customer availability to 99%; • improved service levels by over 5%; • savings of 25% in working capital. <p>These benefits allowed the companies to structure growing customer bases and expand new markets.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>The Problem</p> <p>It is increasingly recognised by Government that fast growth small and medium-sized enterprises (SMEs) are key to economic recovery. Improving the management of supply chains is one important way of enabling effectiveness and sustainable growth. However, many such companies work in complex and turbulent markets and depend on agile and responsive processes to gain competitive advantage. This has often proved a problem for traditional supply chain models which have developed within the context of mature industries dominated by large companies. This research develops an approach to supply chain management suitable for fast-growth SMEs.</p> <p>The Context and Company</p> <p>The underpinning research was conducted by Surrey Business School as part of a successful Knowledge Transfer Partnership (KTP) with expanding company Tilda Ltd. between August 2010 and July 2011. Tilda Ltd was established in 1970 to supply rice to UK consumers. It is now an international food brand operating in over 50 countries and employing over 200 people in the UK. It has grown rapidly over the past ten years and is continuing to innovate and expand its global brand. In consequence the business has grown through the development of new products and new market segments. The company's traditional methods of planning and control were no longer fit for purpose. The KTP employed the principles discussed in references 1 and 2 to develop a more</p>

sophisticated dynamic system to replace the traditional uniform treatment of all value streams so as to enable rapid adaptation to capture growth opportunities across product ranges (refs 5 and 6).

Results

This project extended in an original and innovative direction from Surrey's earlier work on supply chain management. The underpinning research involved a detailed analysis of the company's operations and processes and the development, testing and deployment of an innovative new supply chain management model. This included changing supply chain, planning and inventory control methods and developing stock management procedures that would support product complexity. This was based on models of multiple value streams with different replenishment needs that remained robust even when control tolerances were exceeded (see refs. 1, 5 and 6).

The innovative aspects of the model developed for Tilda included:

- The incorporation of processes to deal with short product life-cycles (see refs.2 and 6);
- Methods to capture demand volatility (see refs. 1, 5, and 6);
- The ability to identify 'decoupling points' (used to rebalance supply and demand within the chain) within this volatile environment (see refs. 2, 4 and 5);
- The application of the model in a novel environment (retail-driven food production rather than the well understood industrial manufacturing sector) (see refs. 1, 5 and 6).

The research used extensive data from the company's sales, production, warehousing and logistics databases to show the need to redesign traditional approaches (based on the so-called DWV3 model – Duration, delivery Window, Volume, Variety, Variability), in order to provide realistic and repeatable performance gains for products with radically different demand patterns and performance objectives within the same manufacturing line.

3. References to the research (indicative maximum of six references)

1. M. Christopher, D. Towill, J. Aitken and P. Childerhouse, (2009), Value Stream Classification, *Journal of Manufacturing Technology Management*, 20 (4), pp 460-474
2. Aitken, J., Childerhouse, P., Christopher, M., and Towill, D.R. (2005), "Designing and Managing Multiple Pipelines", *Journal of Business Logistics*, 26, pp 73-96
3. Aitken, J., Childerhouse, P., and Towill, D.R. (2003), "The impact of product life cycle on supply chain strategy" *International Journal of Production Economics*, 85, pp 127–140
4. Childerhouse, P., Aitken, J. and Towill, D.R. (2002), "Analysis and design of focussed demand chains", *Journal of Operations Management*, Vol. 20 No. 6, pp. 675-689
5. Garn W, Aitken J. (2013) 'Production scheduling in the food industry'. Rome, Italy: 26th European Conference on Operational Research.
6. Aitken J, Garn W. (2012) 'Process variance: Competing Against Customer Demand'. Brussels, Belgium: 5th European Forum on Market Driven Supply Chains.

4. Details of the impact (indicative maximum 750 words)

The research has had impact in three of the areas highlighted by Main Panel C.

- i) *Economic, commercial, organizational*. The research was undertaken within Tilda Ltd with a

view to improving their growth and competitiveness internationally. In technical terms the KTP brought innovation into Tilda's production planning and control by providing a model to meet diverse customer portfolios. This reduced inventories by 35%, decreased stock holding by 15%, increased customer availability to 99%, improved service levels by over 5% and produced savings of 25% in working capital. It also enhanced supplier relationships and performance by aligning supply and demand, creating a more 'customer focussed' supply chain (Tilda Evidence Letter; KTP Report). The new methodology provided a robust and comprehensive understanding of the capabilities, value, scope of analysis and techniques relevant to Tilda's future growth. This is evidenced by the following statement from the Head of Supply Chain:

"Tilda has seen the exchange with the leading academics at the University of Surrey delivering real value to our business in terms of service level improvements, personnel development and supply chain management knowledge gained. We would highly recommend such collaborations between industry and academia to other firms" (Tilda Evidence Letter).

- ii) *Practitioners and professional services.* The research, as part of the KTP structure, provided the company with research skills, training and access to cutting-edge theories that have now become embedded in company practices (KTP Report). According to the, Head of Supply Chain: "The knowledge we acquired as part of the KTP . . . had a significant impact on the ways we managed and planned our production and inventories. Not only did the training of the production planner bring new and innovative approaches to our logistics . . . it also delivered an improved operational performance' (Tilda Evidence letter). In addition to these concrete impacts the company also report gains of a more intangible kind. These included better engagement with key stakeholders ensuring better buy-in and support from across the business, enabling the roll-out of the project on a company-wide basis, a project team able to understand concerns and issues with the new approach before going live, and "an invaluable platform for the business to test and modify solutions before moving to full implementation" (KTP Report). One of the internal sponsors of the KTP at Tilda subsequently moved to a new company and embedded the model there to good effect – see below. The project has also added to the capabilities within Surrey Business School and has allowed the verification of a theoretical model that can now be applied to other organizations in complex fast-growth situations.
- iii) *Impacts on the Environment.* One consequence of this research was an improvement in waste management for Tilda. It has also led to improved inventory management and supply logistics. In both cases there is a positive impact on the environment from more efficient use of resources and transportation.

Reach and Significance

The research has validated an innovative supply chain methodology that has considerable potential for fast-growth companies in complex environments. We are now moving to increase the reach of this model. For instance, a key sponsor of the research at Tilda, moved to a new company, Molecular Products, where , as production manager, he has applied the model developed at Tilda with considerable success:

The results have been dramatic with lead times of products being reduced by 10 weeks in the first six months and a further two weeks in the following six" (MP Evidence Letter).

The results from Tilda and Molecular Products suggest that this innovation has potential for considerable significance. If these savings are replicated (inventories reduced by over 30%;

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service quality increased by 5%; etc.) it will go a considerable way to assisting the Government's target of improved SME growth by addressing supply chain effectiveness.

(<http://www.bis.gov.uk/assets/biscore/enterprise/docs/e/12-1196-exploring-how-smes-interact-with-large-businesses>).

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. Letter from Tilda Ltd. (Provided Statement)
2. Letter from Molecular Products (Provided Statement)
3. Tilda KTP REPORT : <http://casestudies.ktponline.org.uk/casestudies/results> (search Tilda)