Optimising supply chains to deliver environmental, humanitarian and financial reward: a TNT Case Study

Business optimisation is not all about minimising risks, losses and costs whilst maximising performance, yields and profits. TNT Express is using Operations Research to significantly reduce CO2 emissions and its global carbon footprint on its logistics networks, as well as to assist its long-term humanitarian partner, the UN’s World Food Programme, with the redesign of food aid supply chains. It’s just one of the reasons why, this year, TNT has been recognised as the world’s leading company in Operations Research by winning the highly coveted and internationally-renowned Franz Edelman award.

The notion that it’s more expensive to be a sustainable and environmentally-friendly business no longer applies. Cost neutral maybe. But such is the strength of feeling in 2012 for environmental and social well-being amongst companies and their customer base that even if the development and implementation of a business solution doesn’t deliver immediate bottom line profit, it will still be done if the environmental or societal gain is significant. And that delivers a longer term business value.

Sustainability is financially rewarding

At TNT, it does both, however, and has done since Operations Research became part of TNT’s modus operandi five years ago. Its operations research-based, supply chain projects to optimise its global networks and local depot operations have not only enabled the company to save more than €207 million through fact-based decision making, it has also led to a reduction of 60 million driven kilometres and 283 million kilograms of CO2 emissions.

“After cost and service performance, environmental responsibility runs a close ‘third’ on the list of priorities. More than half of all our customers’ requests for quotes and tender documents last year demanded to know the environmental impact on specific solutions,” comments Perry Heijne Director Corporate Responsibility, TNT. “Optimising networks and lowering the number kilometres driven goes hand-in-hand with reducing CO2 emissions.

“Businesses in Europe are ahead of the game, and arguably the Dutch lead the field,” adds Goos Kant from ORTEC, which partners TNT in the design of Operations Research tools. “The cost of fuel is driving businesses everywhere to seek greener and more sustainable solutions to counter rising transport prices. Sustainable optimisation is going global.”

The best solutions aren’t always the most obvious

“One common mistake made by business is to assume that smaller vehicles are more efficient to run,
both financially and environmentally,” says Kant. “There are many factors to be considered – not just the size of vehicles, but also the number required for the volumes and weights being transported, distance travelled and the cost per mile, and emissions per vehicle type etc - before drawing any conclusions. In many cases, the outcome of the modelling will demonstrate that bigger trucks doing less miles are more efficient and sustainable than many smaller vehicles. Likewise, when reviewing city logistics, local governments might assume that tighter, more restricted ‘delivery windows’ is better for businesses and local communities, but actually it can lead to greater congestion, and hence more emissions and noise.”

Greener, quieter city deliveries

At TNT, sustainable city logistics solutions have been actively investigated in the last three years. Jan-Harmen Hietbrink, Manager Operations Process Development Global Networks & Operations, TNT studied at the company’s “GO Academy” for two years to gain his title of Supply Chain Master in global optimisation. “As part of my work, I undertook a Mastercase looking into how we could improve our own City Logistics by introducing mobile depots – adapted linehaul trucks - on the edges of cities and linking these with carbon-free ‘last mile deliveries’. It was essential that we retained our ability to deliver on time and in perfect condition but at the same time, we wanted to reduce congestion and noise for the communities,” Hietbrink explains. “It was a theoretical exercise but I liked the idea so much, and the modelling demonstrated that we were on to something, that after graduating from the GO Academy I got sponsorship from TNT’s Management Board to implement a trial solution in Brussels. The objective? To introduce a solution that was both cost and carbon neutral.”

Tricycles kitted with GPS, alarm systems and reinforced frames were introduced for city centre deliveries and proved to be very reliable, even in adverse weather conditions. “The trikes are brilliant but we have learnt that they are not suitable for all our deliveries, especially the heavier, bulkier items,” Hietbrink notes. “So now we are combing our tricycles with larger electric vehicles on our city deliveries.” The trial has since been extended to city projects in Paris, London, Milan, Barcelona and Berlin.

“Customers really appreciate what we are doing,” comments Heijne. “In Italy, for example, we are working with life-style customers such as Gucci and Nike to deliver goods in the most sustainable way. They want to be associated with excellence in sustainability – not just from the manufacture of products but also in the way they are delivered. All of it counts.” In Italian cities and in all other European cities where we deploy our zero emissions policy, customer and supplier collaboration is critical. Also local governments, who can enhance the value of our solutions, play a key role by imposing the right regulations. To explain supply chain logic to a Mayor is not an easy task but the GO tools really help to explain to city authorities how TNT can contribute to reduce congestion and emission in their streets. And that really works!
Now focus is turning to what’s termed “horizontal and vertical collaboration” between companies, and “Go to Market” solutions. “This is the next logical step,” says Kant. “Horizontal collaboration is where local transportation companies agree to pool their resources and undertake last mile deliveries for each other. Vertical collaboration is where distribution companies ask their customers to agree the same delivery days so that orders can be clustered into fewer multiple drops. ‘Go to market’ solutions operate in much the same way…companies selling Business to Consumer items cluster the goods to be delivered according to area and transport them as a bundle on a pre-agreed day.”

*Humanitarian sector buys into better logistics*

Elsewhere, Operations Research also has a large role to play in the Aid & Development sector. “There are many OR techniques that can be widely applied within the humanitarian sector,” says Lambert van der Bruggen, CEO Ortec Consulting Group. “In fact, I’d go so far as to say that OR is a key driver in the improvement of aid distribution.”

In 2006 TNT Express involved ORTEC with the World Food Programme, to design a supply chain which would improve WFP’s logistics operations behind its school feeding programme in Liberia. “Through our modelling, research and optimisation tools, we were able to redesign their depot structure, which lead to a significant saving in distribution costs. That’s freed up a considerable amount of money that can now be spent on food aid. Knowing that we have been able to make this difference has made me realise that even maths modelling has a humanitarian role to play, and one that people can really understand. It is one of the best projects I have ever been involved with,” says van der Bruggen.

“It’s gratifying to be able to share our tools and resources with humanitarian organisations and know that by designing effective supply chain solutions for them makes a massive difference to those who really need it,” adds Heijne. “In Egypt, across-functional TNT team worked with WFP and local government on the Balady Bread Programme. The supply chain management solution that was implemented made the supply of bread more efficient and delivered not only great value to the people in Egypt but also to the WFP and TNT teams that worked on the programme.

Indeed the Global Optimisation framework is now central to TNT’s CR strategy. “We are working with our customers and humanitarian partners to achieve the best and most efficient solutions that lower carbon footprints from the outset,” says Heijne. “The Global Optimisation programme with its models and tools offers a cohesive structure whilst the Supply Chain Masters from TNT’s GO Academy are eager and capable to assist. There is something very special about this approach; it has engendered greater trust than ever before amongst the aid and development sector. They know they can rely on TNT and partners to design and deliver for them the most cost efficient and sustainable supply chain solutions.”
About TNT’s Global Optimisation (GO) Programme
Operations Research became part of TNT’s modus operandi five years ago to enable the optimisation of its global networks. To date, the projects that have emulated from the research have enabled the company to save more than €207 million through better business decision making, reduce the number of kilometres driven by 60 million and cut CO2 emissions by 283 million kilograms. The GO Programme is an optimisation “ecosystem” built on three Core Pillars: Supply chain optimisation learning through the GO Academy, modelling through Systems & Technology and global Communities of Practice in the workplace.

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