CHAPTER 2: PROCUREMENT AND SUPPLY CHAIN RESOURCE EFFICIENCY

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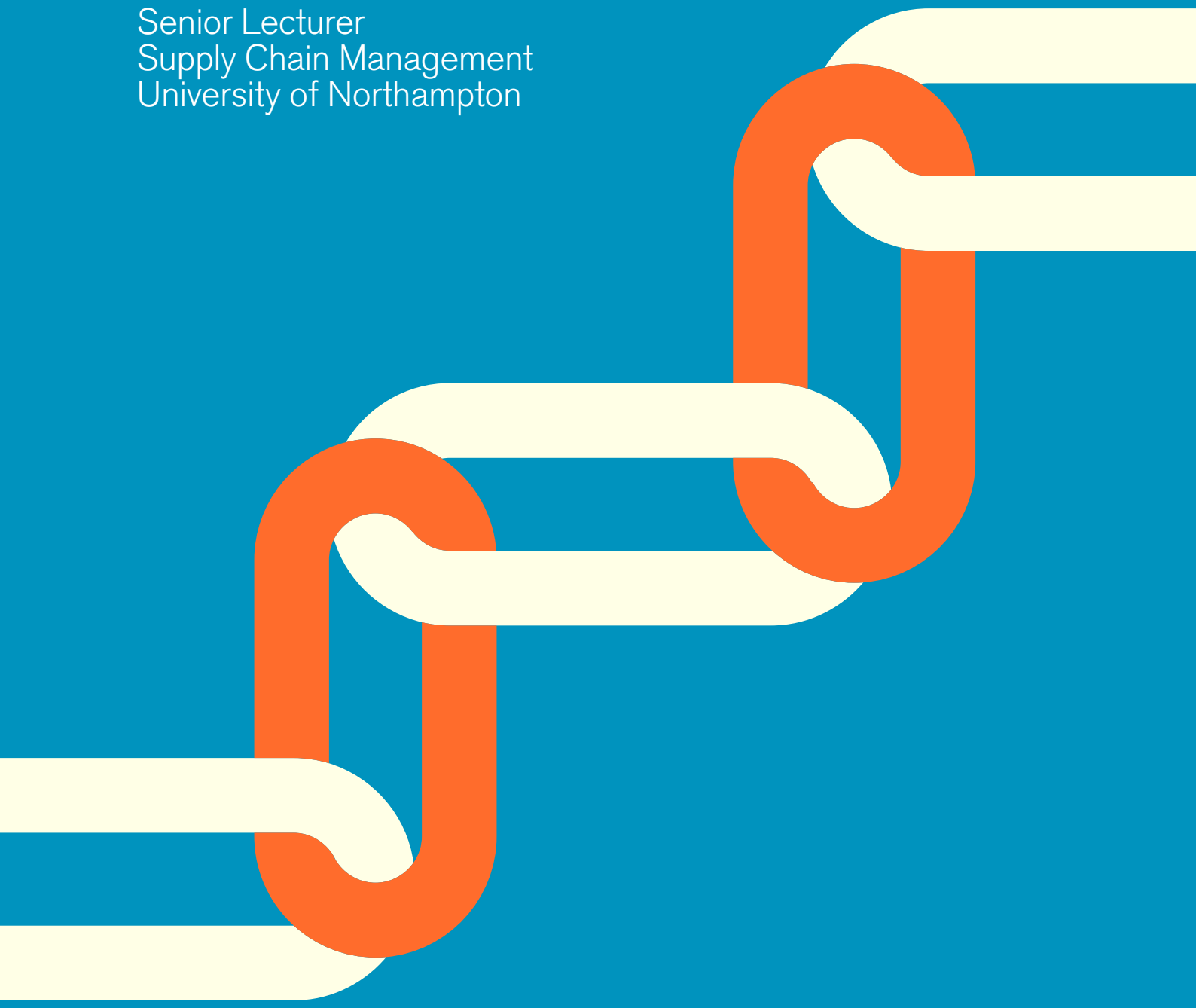

Waste management has seen key developments in recent years. More and more, businesses must recycle, repurpose or reuse at every stage of their supply chain to minimise waste. But there are huge opportunities here for strategic procurement functions to deliver huge improvements through better understanding of materials, suppliers, processes and reverse logistics throughout the supply chain.

Although the scope of this chapter is not to deconstruct the auspices of every supply chain strategy, it will discuss some of the drivers, benefits and actors (Figure 1) of supply chain resilience and sustainability that is central to procurement functions, alongside the consequences pertaining to waste, creating more socially responsible, sustainable and ethical businesses as a consequence.

Drivers	Benefits	Actors
Procurement policy	Long term efficiency savings	Human rights
Whole life costing	Effective use of natural resources	Labour rights
Challenge culture	Reduced pollution & waste	Environmental impacts
Create a sustainable procurement policy	Promotes innovation	Poverty eradication
Communicate & measure suppliers		Governance

Figure 1: Drivers, benefits and actors of supply chain sustainability

Food waste – how procurement can help

Despite the poor track record on food waste, debates on sustainable food systems and waste have predominately centred on production processes, with little consideration as to impacts beyond the farm gate and the intricate and interconnected networks that lay beyond. Waste in the supply chain is unsustainable but in order to minimise it to the fullest extent possible, an in-depth, cross supply chain analysis is required. This will deliver decisive insights into supply chain actors. It is after this mapping has been undertaken that holistic supply chains foster synergistic relationships to reduce wasteage and look for alternative routes to market can materialise.

In order to achieve increased efficiency and lower costs, a coherent global process is required to deliver clarity around supply chain design. Historically, business has operated in a linear economy, one that has enabled holistic supply chains to operate on a make-buy-waste basis, without any need to consider the effects this has on ethics or society at large.

The UN purports a 25% reduction in food waste would eradicate the upcoming challenges associated with food security and sustainability. Every year 1.3 billion tonnes of food gets wasted, equating to a third of global production, while 795 million global inhabitants experience hunger and malnutrition. Alongside the food waste challenge, global consumer trends are changing and this is placing a strain on sustainability in a supply chain context. For example, the average person in China consumes 57kg of meat per annum, an increase of 25% over the previous decade, with an anticipated increase of an additional 50% over the next ten years. This is predicted to have a knock-on effect on demand for cattle feed (grain) of 94 million tonnes, on top of the current requirement of 650 million tonnes per annum. As a society we are heading for the perfect storm, where consumer demand and waste inhibits supply and creates an unsustainable supply chain, unless procurement functions can effectively drive change.

Why procurement?

It is the procurement functions of today's business that are best placed to undertake the function of driving ethics and sustainability. However, as public sector procurement has been proven to harness the ability to establish economic, environmental and societal models for others to emulate, it must take the lead on informing the future of ethical and sustainable supply chain operations (Day, 2005). In addition, both public and private sector procurement functions have been identified as best placed to effect development and adherence of sustainable policy processes and targets (Sommino, 2010).

Continuing with food as an example, the sustainable food supply chain pertains to food origins, production methods, transportation (logistics) and final destination. The latter [final destination] according to the Waste Resource Action Plan (WRAP), has a resultant 4.2 million tonnes per annum of avoidable food waste within the UK (WRAP, 2012). Procurement has a critical role to play in dealing with this 'avoidable' waste, as the linear business model (make-buy-waste) concentrates decision metrics on 'best value' or 'economically profitable tender', both of which inform public contracts within the EU. In the eyes of 'linear economy' procurement professionals this is interpreted as 'lowest cost' and does not give any regard to the ethics, source, health and wellbeing or the holistic agri-food value chain. Therefore, one could argue that;

> Although procurement has the proven rigor and structure to lead change in a supply chain, more needs to be done to change cultures within these decision-making departments, to embrace 'softer' elements of business decisions to bring holistic benefits in terms of waste reduction, which arguably brings cost reductions.

Mitigating the supply chain risk through data

In order for procurement to effect decisions on the supply chain that will inform more sustainable practices and reduce waste, data acquisition and sharing of that data is key. A traditional farm to fork food supply chain operates on a forecast, which in the case of food originates 'downstream' (toward customer) with a retailer. Food retail forecasts will be based on but not restricted to market trends, consumer demands

and expected market uptake (in case of new product introductions). However, rarely do these forecasts pass fully 'upstream' to the producer of raw material i.e. farmer. Taking the example of planting oats for UK cereal producers – the forecast lead time is habitually 18-month in advance of harvest. During this time, consumer tastes can change, prices due to other commodities such as oil differ and weather events can affect a harvest. Collectively, these events are known as 'supply shocks'. It is these supply shocks that procurement departments work to mitigate. However, if a supply shock occurs in the current linear economy little is done to inform upstream actors of the change in demand. In the rare instance this does happen there is scarcities of 'other' options available for product re-use, therefore the product becomes waste, despite still holding a nutritional benefit. Consequently, by not sharing 'real time' data and implementing alternative routes to market for this material, we can determine this as an avoidable waste.

With a growing global demand for food, any supply chain with avoidable waste can be classified as inefficient. One would argue however that procurement departments should work with their upstream suppliers, which for the European food industry comprises 90% small to medium enterprises (SMEs). However, SMEs have little resource capability to find alternative routes to market or uses for their product. It is therefore incumbent on government and larger corporations to support redeployment of what would be traditionally termed as 'waste' in the linear economy and adopt a more circular approach. Some sectors would argue that this requires a separate logistics infrastructure and therefore additional cost, however this argument is flawed if we examine the amount of empty vehicles that currently reside within logistics and the huge inefficiencies in deep sea containerised shipping.

The aforementioned challenges of a linear economy not only affect the local economy, but cause a ripple effect across our global trading communities. Harnessing 'real time' information on supply chain activity will not only reduce avoidable waste but further mitigate food security challenges by diverting or finding alternative uses for food stocks, but furthermore ease price shocks and reduce food mountains.

Intelligence and collaboration, reduced waste and fraud

Arguably, the sharing of data and intelligence is a tried and tested method within law enforcement agencies. Why then are supply chains not adopting this tried and tested approach to their business operations? With the amount of waste being generated across the European Union, it can be argued that shared data on resource availability would assist procurement professionals in being able to re-use product, rather than rely on new and limited resources. After all waste in a linear economy is seen a valueless product, the circular economy forces us to view wastes as a product with value.

A database of resource availability, separated out by category and updated automatically through enterprise planning systems would greatly assist procurement professionals in making informed decisions. Quite often a business will repurpose or reuse material that is a by product of another manufacturing process. This would be particularly the case if this was a reliable source and supported with robust logistics networks. Data could act as a facilitator of 'waste exchange' and further support reverse logistics operations.

Another function of data in procurement departments to reduce waste is the mitigation of fraudulent activity (Fassam et al, 2015). As demand for food increases and the UKs reliance on imports becomes greater, the visibility within our food supply chains will diminish unless steps are taken at government level to facilitate cross border sharing of information. This sharing of information will not only impact on enhanced health and wellbeing risk reduction by having greater surety of product, it will further reduce waste. This will occur as each time a fraudulent activity is detected the product is deemed as 'waste' and mitigation of such activity through shared use of data would therefore arguably reduce wastage and assist procurement departments and consumers alike by way of greater visibility.

Many layers of suppliers/tiers – creates complexity and waste

The United Nations procurement handbook (UN, 2012) suggests that key barriers to achieving sustainable procurement are related to historically-ingrained cultural practices. This generates complexity of contracts which cut across every element of the supply chain, from sourcing of raw materials, flowing through the varying logistics nodes that support holistic value chains, to the downstream elements of consumer use. The myriad of different cultures, languages and contracts operating across the very long supply chains in our globalised economies are a recipe for disaster. Overly complex procurement contracts are habitually the default position to counteract communication and cultural challenges, but content gets lost in translation and is (being blunt) a box ticking exercise, adding little value to the overall holistic supply chain.

In a procurement context, Western based businesses quite often assume all actors in the chain will understand 'their' roles and responsibilities in bringing holistic benefit to all on the global stage. A current example is the modern slavery act, whereby all businesses with a turnover above £36 million are annually required to ensure their global supply chains are free of slavery. However, in a globalised context this is difficult to ascertain and police, as within certain cultures, it is acceptable to utilise human beings in a manner than contravenes human rights. How does this affect waste? Waste comes in many guises, from physical material to wasted resource. Organisations that understand this concept and utilise their procurement functions to work collaboratively with suppliers horizontally will foster ethical, sustainable and transparent supply chains, which arguably foster the ability through engaged suppliers to effect greater resource efficiency and thus reduce waste and deliver greater global societal good.

According to research on the effects of supply chain waste and procurement (Fassam et al 2015), complexity was found repeatedly across procurement functions, with predominate focus placed upon Tier 1 suppliers and the remainder of upstream tiers (toward raw material) were not considered. Frequently, outsourcing of a process is undertaken to lower cost and mitigate risk, and as such responsibility and tracking of supplier adherence to specifications are now external from the organisation. Examples of this are frequently seen within the food retail supply chain, whereby retail companies place orders with Tier 1 suppliers, handing over all risk and responsibility for the subsequent processes and having little visibility from there on in. This was the case with the horse meat scandal of 2013, whereby retailers outsourced their 'output risk' due to price and demand, thus loosing all control of their business processes and

as a consequence suffered 'input risk' due to fraudulent behaviour causing excessive wastes in a supply chain.

Transfer of liability that organisations can rely on to mitigate risk is a symptom of the outsourcing culture that businesses have gone through since the mid 1990s. This has eradicated the visibility needed in a supply chain context to bring true closed loop and sustainable supply chains to the fore. However, there is a global shift to near-shoring or re-shoring, with manufacturing shifting closer to end consumers in a bid to manage demand. As such, both barriers to supply chain success and culture should instigate a shift to the way risk is managed. This will allow procurement departments to have greater sustainability and visibility across its many tiers. As such, this will oblige government to look closer at the reasons why companies take manufacturing or sourcing outside the confines of the UK. Understanding this shift and implementing measures to re-shore will reduce exposure for UK businesses and as such lower waste.

Conclusion

In conclusion, there is currently a global business community that is driven by cost metrics, with outsourced risk policies, and procurement functions that have little insight into demand and production. Further, there are limited and diminishing material resources and a research gap in the area of sustainable procurement. Additionally, the European Commission has issued a call to gain 30% efficiency over current supply chain processes and a United Nations report that indicates that as a global community we are at a standstill. As such, soft encouragements for more sustainable procurement have been set in stone, but practical suggestions for developing this at a wider scale nationally and internationally remain to be explored.

> It has been found that procurement is best placed to effect change and deliver governance to holistic supply chains, with the public sector leading the way as an exemplar of what good practice looks like in a business context.

An overriding requirement is needed to foster greater sharing of information across supply chain actors in order to reduce waste and make supply chains more resilient and sustainable. The marketplace is crowded with SME's all of which are looking for alternative routes for products or different sources of raw material and the creation of logistics industrial symbiosis and leveraging off of the current logistics networks is a way around this. Furthermore, this investment will not only foster a resource efficient economy, it will stimulate growth, innovation and skills development whilst meeting ethical and societal needs.

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