'Food supply chain resilience - How effective are existing voluntary initiatives in England and is there a need for legislation?'

L. Fassam.
Faculty of Business and Law, University of Northampton, UK
liam.fassam@northampton.ac.uk

S. Dani
Business School, University of Huddersfield, UK

Food Supply Chain Risk Management

Supply chain risk management has received plenty of attention over the years from both academics and practitioners alike, however the true efficient, resilient and waste free supply chain still alludes business networks, with skepticism that this [efficient supply chain] can actually be achieved (Sodhi & Tang, 2012). This is in part due to risks manifesting themselves within supply chains and external events associated with same being measured as aggregate level events such as criminality, disease, natural disasters, technology and terrorism (European Commission, 2014). Therefore, traditional measures of cumulative risk assessment do not deliver aligned correlation to business operations, thus meaningless metrics are utilized by organisation's working toward greater supply chain efficiency.

The intricacies of supply chain risk management become even more complex when reviewing globalized food value chains, as the 'perfect storm' of rish brewing with an anticipated 50% increase in demand for food stuffs by 2030 (House of Commons International Development Committee, 2013). Therefore, food supply chain risk management requires a more comprehensive review in order to appreciate risk mitigation in order to move away from the traditional practice of reviewing aggregate level events to build greater food sustainability.

Food waste & procurement

Despite the poor track record on food waste, debates on sustainable food systems and waste have predominately centred around production processes, with little consideration to impacts beyond the farm gate and the intricate and interconnected supply network.. Waste in the supply chain is unsustainable, and in order to address this important issue, in-depth cross supply chain analysis is required. This will deliver decisive insights into supply chain actors (individual nodes or businesses of a food chain) and stages that are producing waste. A holistic mapping of the food supply chain will provide the required understandings to foster synergistic relationships to reduce wastage and look for alternative routes to market.

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 of the holistic agri-food value chain. Therefore, one would argue 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 departments. It is necessary to embrace decision making processes around 'softer' elements of business decisions to bring benefits in terms of waste reduction, which arguably delivers cost reductions as a consequence.

Theoretical model of food supply chain resilience

To achieve a more efficient and resilient food supply chain, more coherent connected processes across holistic value chain actors are needed. This will be no easy task given the complexity of globalized food supply chains and the manner in which traditional business models have been allied to a linear make-buy-waste process. However, procurement departments have been identified as the best place to drive the auspices of ethics, efficiency and sustainability throughout the supply chain actors (Sommino, 2010).

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

Fig.1 Drivers of sustainable food procurement (Fassam, 2016)

Research into food supply chain waste (Fassam et al, 2015) challenges the traditional complexities of procurement that has an embedded culture of focusing only on Tier 1 suppliers, driving a lack of holistic supply chain connectivity. Furthermore, it doesn't support the development of business models to support alternative routes for waste products such as secondary food supply chains and deliver the longer term benefits of efficiency both economic and societal (Fassam, 2016). For the auspices of true food supply chain efficiency to come to the fore, greater visibility is required across value chains, with a focus on whole life costing, measured supplier behaviors and appreciation of cultural change required (Fig.1).

That said, supply chains with procurement departments that are aligned to the auspices of good ethics, efficiency and sustainability need to be supported by robust processes and routes to market for waste product. Aforementioned secondary markets such as but not limited to food banks or social supermarkets have been a proven way to foster efficient business models that deal with food chain waste reduction whilst delivering societal value (Fig.1). However, key drivers pertaining to procurement policy and challenging the traditional culture of the linear business model require a more formalized governance structure. Support is needed from Government to drive legislation to support change and deliver needed societal value to create greater food chain sustainability.

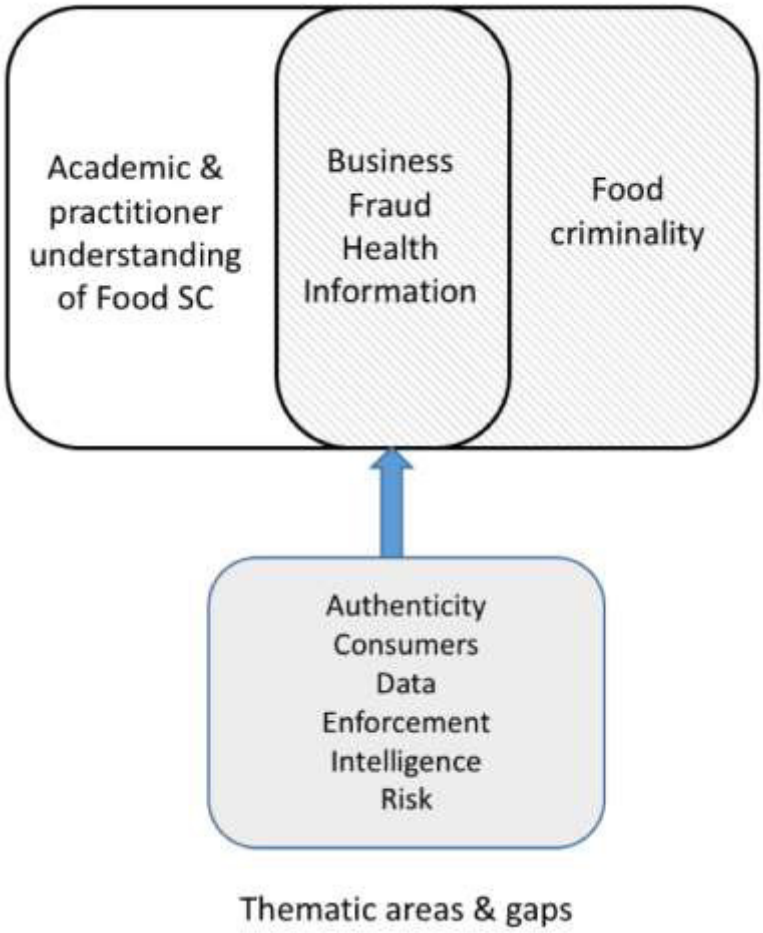

Fig.2. Theoretical model of food supply chain resilience (Fassam & Dani, 2016)

In addition to the lack of governance in supporting secondary routes to market, the food supply chain lacks holistic visibility. This may give rise to the use of secondary food markets potentially leading to opportunistic behaviours and thus facilitating food criminality (Fig.2). This [opportunistic behavior] further strengthens the need for legislation to support the true 'closed loop supply chain', enabling all actors in the supply chain to have robust processes and understanding of the routes to market in order to lower waste, create efficiency and develop greater societal benefit.

Conclusion

In conclusion, there has been a plethora of research undertaken in the field of food supply chain sustainability however, none has led to the creation of the truly efficient and societally driven food chain, one which measures all actors (farm to fork) creating culpability over waste reduction (including consumers). Furthermore, routes to market exist (secondary markets) for food waste reduction, however these lack the visibility and governance of procurement departments in order to effect change. In addition, the deficient nature of legislation around secondary markets leave businesses who embrace a more sustainable model exposed due to the lack of governance and government support required to comprehensively create sustainable closed loop food supply chains. Appropriate legislation and governance will provide support to mitigate the risks and exposure related to opportunistic behaviours.

Therefore, the authors purport that in order for greater holistic food chain efficient and waste reduction, Governments need to act upon legislation to create the truly closed loop secondary market food supply chain that affords procurement departments visibility and risk mitigation with food waste, while permitting the auspices of societal value to come to the fore.

References

Day, C., 2005. Buying green: the crucial role of public authorities. Local Environment 10 (2), 201–209.

European Parliament (2014). Report – on the food crisis, fraud in the food chain and the control there of, Committee on the Environment, Public Health and Food Safety, (2013/2091 (INI), October 10

Fassam, L. (2016) Procurement and supply chain resource efficiency. In: Benoy, A.-M. and Owen, L. (eds.) *Link to Link: Driving Resource Efficiency across Supply Chains.* London: Policy Connect. pp. 20-27

Fassam, L. and Dani, S. (2016) A conceptual understanding of criminality and integrity challenges in food supply chains. *British Food Journal.* 0007-070X

Fassam, L., Bates, M. and Dani, S. (2015) Resource efficiency: creating a route to logistics and the circular economy. Paper presented to: 20th Logistics Research Network (LRN) Annual Conference and PhD Workshop, University of Derby, 09-11 September 2015.

House of Commons International Development Committee (2013) 'Global Food Security: Government Response to the Committee's First Report of Session 2013-2014', (HC 626, 2013-14), [Online] Available: http://www.publications.parliament.uk/pa/cm201314/cmselect/cmintdev/176/176.pdf

Sodhi, M., Tang, C. (2012) Managing Supply Chain Risk. New York, USA: Springer.

Sonnino, R., 2010. Escaping the local trap: insights on relocalisation from school food reform. Journal of Environmental Policy and Planning 12 (1), 23–40.

Soon, J. M., Manning, L., Dani, S., Fassam, L., Jackson, E. and Farag, K. (2016) Reduce surplus food: linking corporate donors and food banks. *Science.* 1095-9203.