Chapter 4: Food Retail and Distribution: Can supermarkets contribute to a healthy and sustainable food system?

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Abstract

This chapter examines the global food retail and distribution situation with a specific focus on supermarkets. We explore the power and control that supermarkets have over the food supply chain, not only control over consumers (culture, choice and health) but also the control that supermarket buying desks have over food that is grown and produced via contracts and contract specifications. We focus on the UK and Australia, two countries which present overlapping and contrasting case studies of opportunities and barriers to changes in food provision. We suggest that the likely future trends shaping grocery and supermarket expansion will come in the virtual world of internet ordering and delivery. Lastly, we recommend the need for food retail and distribution to shift away from a 'productionist' paradigm to an ecologically-integrated approach providing an opportunity to transform food retail and distribution towards a business model that is supportive of a healthy and sustainable food system.

Introduction

A key driver of the global changes in food related health and sustainability is the food retail sector, particularly through the mechanism of supermarkets. These are the means through which food is channelled from growers to consumers and as such demand our attention. The food retail sector generally includes any business such, as supermarkets, where food is sold to customers and retail food is defined as '*food, other than restaurant food, that is purchased by consumers and consumed off-premises'* adapted from (Seth and Randall, 1999). Food provision and consumption systems embody huge environmental impacts worldwide. Food retailers as gatekeepers have a key role to play to enable sustainable consumption and provision to become everyday practices (Mason and Lang, 2017).

Food distribution, often known as post farmgate activities, refers to a complex combination of activities, functions and relations including production, handling, storage, transport, process, package, wholesale, retail (Estrada-Florez and Larsen, 2010). The supermarkets also have a major impact on pre-farmgate activities on small scale farmers, agricultural workforces and women's inequalities (Oxfam, 2018). Key to modern distribution is technology food supply chain management such as just-in-time (JIT) retailing which allows goods to flow in the food chain without having delayed periods of storage (Hoffman and Mehra, 2000).

Sustainable food distribution systems continue to evolve. Distribution from producers to customers plays a significant role in the environmental performance of the food supply chain. One of the major environmental concerns is in relation to the amount of greenhouse gas (GHG) emissions resulting from the transportation of food products (Estrada-Florez and Larsen, 2010). The World Economic Forum (Schwab, 2009) estimates that the global footprint of logistics and transport is 5.5% of the total annual GHG emissions generated by human activity. In absolute terms, road freight makes the highest contribution to GHG emissions at around 57% of the total. It is followed by ocean freight at 17% of the total. With consumer consciousness growing, food distribution needs to embrace and adapt to improve its environmental performance, while remaining economically competitive. Here we focus on the current role and contribution of supermarkets as key players in an 'unsustainable' food system and look at ways that they can be transformed to deliver more healthy and sustainable food and food systems.

In terms of global expansion, supermarkets deliver low prices and the promise of modernity in the form of convenience and processed foods and are seen by many as the champions of neo-liberal economics (Howard, 2016). The modern food distribution system is a miracle of modern ingenuity and many in the sector see it as being sustainable and delivering both environmental and health benefits (Desrochers and Shimizu, 2012).

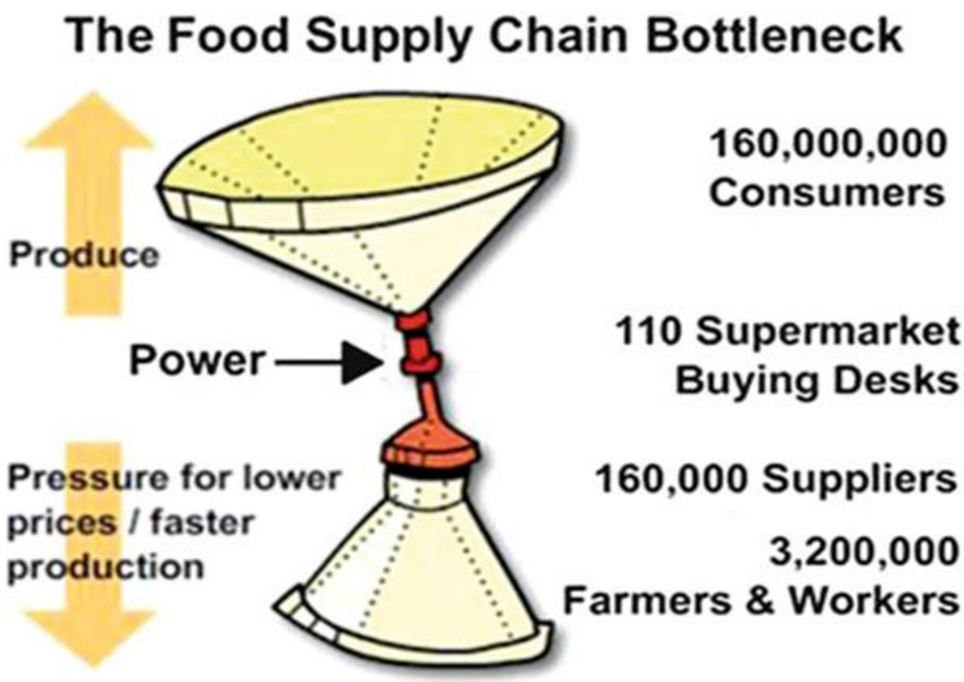
The three pillars of nutrition, food safety and environment (sustainable food supply) were developed by World Health Organization (WHO) as guides for national governments for the achievement of national health and nutrition plans in line with the provisions of the International Conference on Nutrition (FAO and WHO, 1992). However cheap food is an illusion especially when costs such as damage to the environment and transport are factored in. These costs are absorbed by someone, somewhere in the food chain, whether the health of agricultural workers in the US or banana growers in Africa or the Caribbean (Albritton, 2009). We need to leave a greater amount of money at the farm gate which is as equally true for European and Australian farmers as it is for farmers in north Africa supplying the European market or workers from Africa working in horticulture in Spain, often under terrible conditions. Not only are these costs hidden but often the costs of cleaning up and addressing damage to the environment are left to the local communities to pick up (Knox, 2014).

This chapter examines the global food retail and distribution situation with a focus on the UK and Australia. The two countries present overlapping and contrasting case studies of opportunities and barriers to changes in food provisioning specifically in relation to health and sustainability considerations. The UK has a system which is dominated by five to six key retailers and Australia by two with new competition from what are called the 'hard discounters' with their emphasis on own-brand labels, smaller store size and a focus on operations management, they offer similarities but also divergences. Australia shares some of similarities with a duopoly of retail control (now being challenged). Retailer dominance through supermarkets results in dominance of all parts of the food chain from farmers to sustenance. From the perspective of health and sustainable food systems, there are lessons that emerge from our analysis of the UK and Australia that we think are global and broadly relevant to many other middle and high-income countries as well as emerging economies.

Overview of the current status of global food retail and distribution

Globally, supermarkets are at the core of many changes in the food system, alongside the hospitality sector. The reasons for this are myriad with figure 4.1, using a model of Europe, shows how supermarkets control the food chain. Not only do they control access for consumers but also their buying desks control the food that is grown and produced. This gives them unprecedented and disproportionate power over the food system (Monteiro et al., 2018, Popkin and Reardon, 2018). Because of this power differential we see health and sustainability issues emerging within the current global food retail and distribution sector.

Figure 4.1 The food supply bottleneck for Europe (Grievink, 2003)



The nutrition transition is being driven by changes in the food system and delivery. This is not a naturally occurring process but one being driven by major global players including supermarkets (Caballero, 2002). For some this represents progress, a way forward towards improved nutrition and more effective, and efficient food systems (Desrochers and Shimizu, 2012); for others the consequences are deteriorations in environmental sustainability, nutrition and health status. This transition is an accelerated pace of change with emerging economies now being transformed in 3-5 years with a move from local foods and shops to a long food chain dominated and driven by supermarkets. We see the evidence of this in South America (Popkin and Reardon, 2018) and Africa (das Nair, 2018). Weatherspoon and Reardon (2003) identified that supplying supermarkets presented ‘both potentially large opportunities and big challenges for producers’, including amalgamations to meet bulk contracts, investment in phytosanitary procedures and equipment to gain contracts. The impacts on livelihoods are also enormous as farms consolidate and people move off the land (Oxfam, 2018).

Through contracts and contract specification, supermarkets encourage concentrations of growing mono-cultures and ultimately for many at both producer and consumer levels dependence on supermarkets for supplying and sourcing food. Howard (2016) shows that the growth of supermarkets has followed a path from regional to global dominance with health and sustainability issues beginning to emerge. He also shows that the small store convenience sector is following a similar path with 7-Eleven (a Japanese-owned American international chain of convenience stores, headquarters in Dallas, Texas) having a 24% share of the US retail market with plans to '*grow via more acquisitions*'. The dominant drivers are increased control with a reduced spread of ownership. These are global trends with regional variations, so Tesco in some areas, Carrefour in others and through mergers and acquisitions in other territories Walmart. Table 4.1 shows the global situation with the corporate headquarters of each company.

Table 4.**1 Top ten global retailers**

Name	**Country of origin**	**Sales /year 2015 (Billions UK Pounds)****	**Comments**
Walmart	US	267	3 million employees worldwide. By far the largest global food retailer with annual sales equal to Carrefour, Tesco, Metro and Aeon combined. In the UK they operate under the ASDA banner.
Carrefour	France	89	Recently expanded into Middle Eastern countries including Iraq, Iran, Syria.
Tesco	UK	62	Major operations and financial success in the UK. Failed expansion to the US. Currently withdrawing from countries such as Poland and facing problems in Thailand.
Metro	Germany	61	Focus on wholesale and food service.
Aeon	Japan	56	Their corporate mantra is "Act Global, Think Local".
7-Eleven Holdings	Japan	55	They also own some hospitality enterprises including the Denny's restaurant chain.
Kroger	US	51	US based, no expansion outside the States. In 2009 they donated to charity 10.9% of their pre-tax profits ($64 Million U.S.).
Lidl	Germany	50	Known as a 'hard discounter', now in 30+ countries, expansion plans continue. They were not successful in Norway and exited that market.
Costco	US	47	You pay for membership and then you can shop, benefiting from wholesale prices.
Auchban	France	46	Innovative and not afraid to try new markets. In the US they shut down their outlets after not making a profit. Current expansion is focussed on eastern European countries especially Russia.

**Estimated using from data from Forbes and Kantar World Panel data 2014-2016, authors own

A consequence of this vertical control by the retailers is that alternative sources of supply such as wholesalers are ‘written out’ of the supply chain. The nature of the scale of these international or transnational corporations (TNCs) and the size of operations means that they rely on global food supply chains going where prices are low and building in added value via processing. Processing of foods has two advantages for the retailers, firstly processed foods store and travel better than fresh foods and secondly, they develop consumer dependence and deskilling (Lang et al., 2009) however these advantages come at a cost to the health and sustainability of the global food system. This has driven consumption towards ultra-processed foods resulting in longer food chains and issues for sustainability (Monteiro et al., 2018, Popkin and Reardon, 2018). Major retailers claim that the scale of operation results in economies of scale including less damage to the environment (Desrochers and Shimizu, 2012). Multiple small shops are more wasteful according to this premise relying on many lines of supply and repeating processing at the local level (Seth and Randall, 2005). However, the counter argument is that the global nature of the food chain, operated by supermarkets, allows costs and damage to the environment and health to be hidden along the way; so low-wages in growing countries, degradation of local environments, pollution along the food distribution chain can be more easily concealed (Mason and Lang, 2017).

The concentration of power among retailers can be further represented globally by a north/south divide with major TNCs being based or originating in the rich north, see table 4.1; but of course, expansion and growth is based on developing markets in the global south (Reardon et al., 2005). The funnel model represented in figure 4.1 is repeated across the globe within and between countries in terms of food power, trade and control of the food chain (Howard, 2016). A small number of TNCs have power through their buying desks in figure 4.1, controlling those who produce food and controlling the choices of those who consume (the industry calls this ‘choice editing’). This also contributes to a homogenisation and appropriation of food cultures (Bevan, 2005).

In terms of economics, raw goods are often exported and processed in importing countries meaning that the added value does not remain in the country of origin. Coffee offers an example. The costs are absorbed by someone, somewhere in the food chain whether the coffee grower in Africa who receives AUS$0.30 [*30 Australian cents*] per kilo for a product that eventually sells for AUS$35) in the supermarket or the loss of local diversity, or the increase in food miles and pollution that the consumer eventually picks up in other areas (Oxfam, N.D.). There is a need to leave a greater amount of money at the farm gate. Policy makers tend to approach the three pillars in silos (separate entities) rather than as aspects of a total food economy, which meet and intersect at different points. The key point is that cheap food is an illusion especially when the costs to health and sustainability, such as damage to the environment, transport and livelihoods are factored in.

Retail outlets are changing and the consequence of this is an increasing tension between the big supermarket giants versus smaller food stores, food social enterprises, farmers markets, bartering and food hubs (Estrada-Florez and Larsen, 2010). The retail food sector has become a major employer often with poor employment practices - a lack of security and low wages. As discussed earlier, employee security and income problems run right through the food system from farm to fork. A system which does not recognise or reward people with a living wage is not one that can be considered healthy or sustainable. For example the supermarket share of the end consumer price is 30%, with seed and fertiliser companies getting 25% and the farmer 13.9% (Oxfam, 2018).

National and Regional Variation in Food Retail and Distribution

The UK and the changing supermarket situation

The UK has undergone a recession (2007-12) and seen changes in shopping behaviours driven by the twin influences of increases in food prices (30% increases) and greater awareness of sustainability and food waste issues~~.~~ The monthly shop has been replaced by top-up-shopping and the retreat of the supermarkets back to town centres, after abandoning them in the 1990s and early 2000s. The '*food deserts'* have now been filled with smaller size supermarket stores offering a limited range of essential goods at prices often up to 15% higher than they sell for at their 'big bins' or online. The growth in small supermarket format on the high street is being led by the major supermarkets and does not reflect a growth in independent ownership. All this is possible because of technology and changes in supply chains. Supermarkets do not keep stocks of food on site, new systems such as just in time (JIT) retailing, allow goods to be shipped as they are bought and move off the shelves. From a health and sustainability perspective there are now moves to using electric vehicles and carbon neutral approaches for transport, with some of major supermarkets and their suppliers now using the rail networks to transport food from the European continent to central hubs in the UK, this is a move away from using road transport for the total journey (Behrends, 2012).

Tesco the dominant supermarket chain in the UK, with just over one quarter (27.6%) of all food retails has set up a cheap new discount chain (Jack's) to combat the loss of sales to what are called the 'hard discounters' namely Aldi and Lidl, with Aldi now the fifth largest supermarket chain in the UK. It is important to remember that these 'hard discounters' are not new models of operation but variants on a dominant model; they offer a smaller range of goods at cheaper prices. In the early stages of their incursion in the UK and Irish markets the model was based on large warehouse provision with goods being imported from the European mainland. More recent developments have shown them offering more and more goods produced in the UK or Ireland. This is especially true for fresh meat and vegetables, while large amounts of processed goods continue to be imported.

The hard discounters have grown at the expense of the major chains; there is no new or growing consumer base, the supermarket wars for customers are based on cannibalising customers from competitors. Some of the supermarkets with smaller market shares (Waitrose, Iceland, Marks and Spencers) have positioned themselves as offering sustainable food as part of their core offer but this comes at a price. The offer is aimed at a core customer base which tends to be older, higher income levels and concerned with sustainability. The supermarket, Iceland, is a notable exception to this with low-income consumers and a produce range of mainly frozen goods (see their commitment to environment at http://www.iceland.co.uk). This changing supermarket situation is prefaced by tensions in the food system with the consumer demanding local and sustainable goods but at the same time driven by price reductions and the lure of a bargain (Mason and Lang 2017).

In the UK between 2000 and 2008 a few supermarkets set up and experimented with local buying offices attempting to develop local supply lines. This coincided with increased consumer awareness and demand for local food, organic food and increases in oil prices. The recession from 2007 to 2012, resulted in consumers becoming more price conscious and a decline in demand for locally produced foods, this resulted in the UK supermarkets shutting down their local buying offices. The decline in oil prices made it again more competitive to source good from abroad.

Since the official end of the recession from 2012 there is a mixed economy of provision with local food being offered at a premium and specifically around some key product categories. Many of the supermarkets now promote fresh beef from the UK and Ireland, as this is a product category that consumers seem to care about and concerns about fraud and contamination (due perhaps to the horsegate and BSE scandals). The retail sector in the UK is heavily dependent on imports and the intention of the UK to leave the European Union will have major impacts on food supply chains. For sustainability the border free transfer of goods within the European Union will cease, resulting in increases in delivery times and transports being held up at border crossing (Millstone et al., 2017). This will result in longer temporal food supply chains leading to increased nuisance and pollution on the seas and roads.

A new emerging entrant to the UK and US food distribution systems is Amazon with the infrastructure for home delivery. But currently online retail shopping remains small as opposed to online ordering of take-away foods such as the like of Ubereats and Deliveroo. Currently online-only grocery retailers are benefiting from what is called '*sofa surfing*', with UK sales increasing from UK£1.1 billion in 2010, to an estimated UK£2.3 billion in 2015 out of a total retail spend of £120 Billion+ (MINTEL, 2016). This trend is set to increase with the major supermarkets in the UK heavily investing in infrastructure to deliver food to the home. We pick up this issue later in our discussion along with the opportunities and threats this poses for suitable food supply systems.

Australia and the changing supermarket situation

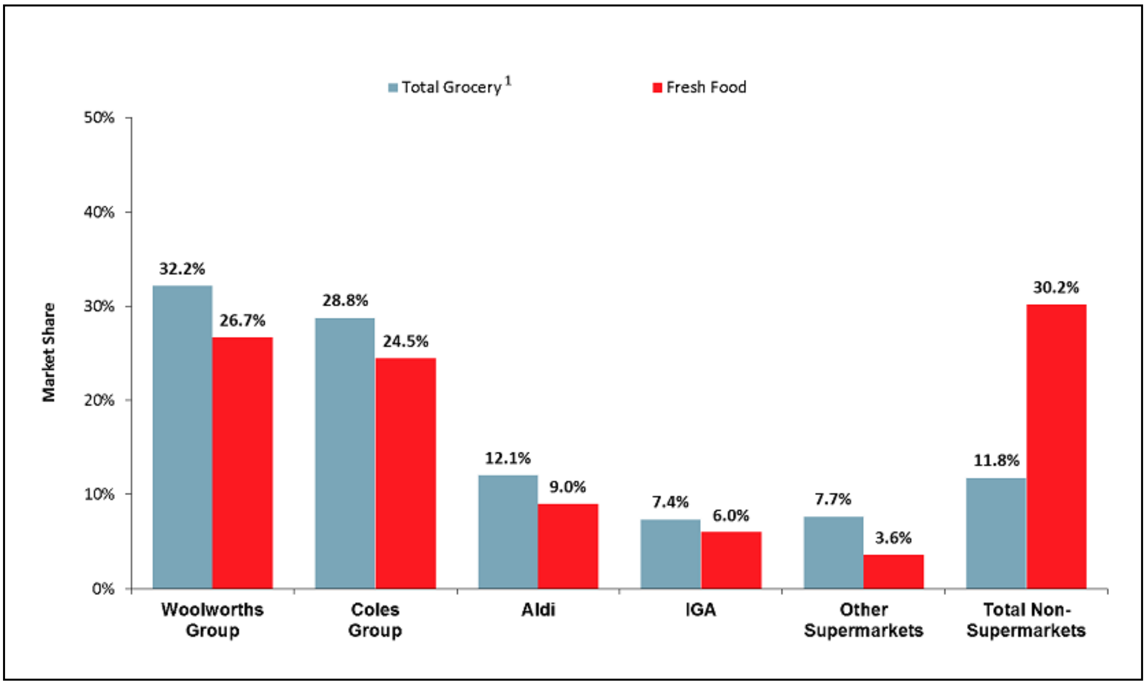
Australia by-passed the development of its own system of agriculture and imported a European model with three key periods of change in the Australian foodscape – the industrialisation of the garden, the pantry and then the kitchen (Symons, 1998), followed by the domination of the Australian plate and palate by supermarkets (Santich, 2012). This has had impacts on retail and food systems with the model of operation reflecting production methods and now the move to ultra-processed foods with an impact on health outcomes (Pulker et al., 2018a).

The demands of the global food economy and the pressure to grow crops for cash has had implications for local communities in Australia. This effectively has made the market less amiable for farmers (through oversupply) and encourages the environmental degradation of the land through unsustainable farming. The effects have been devastating for the health and welfare of the rural sector with fewer family farms and a growth of corporate forms of agricultural production (Lawrence et al., 1992). This has led to the death of many small rural towns with local shops being driven out by supermarkets (Knox, 2014).

Similar to the situation present in the UK, power within the Australian food retail sector is unequally concentrated with two main supermarket chains, Coles and Woolworth, holding a powerful position in the food system acting as primary gatekeeper, with a combined 61% share of the total grocery market (figure 4.2). With this power comes responsibility. It is evident that they are a long way from achieving conditions that would lead to a successful food system that delivers wellbeing, social justice, and environmental stewardship (NEF, 2014).

To-date there has been few positive public health impacts of this supermarket power (Pulker et al., 2018b). Of the total grocery market in the 12 months to December 2017 Woolworths had a market share of 32.2% and Coles 28.8%. '*Hard discounter'* Aldi has also emerged in Australia, challenging the dominant supermarket players with a market share of 12.1% (Figure 4.2). The entrance to the retail market of Aldi, has caused disruptions in the food system. Aldi's approximately 1350 or so products pale in comparison to Coles and Woolworths broad and deep product ranges. Yet this provides them with lower supply chain costs and great efficiencies. The market share of other supermarkets such as Independent Grocers Australia (IGA) has dropping down to 7.4% market share seen in figure 4.2.

Figure 4.2. Share of Australian total grocery market versus share of fresh food market (Morgan, 2018)



Source: Roy Morgan Single Source. 12 months ended December 2017, n= 12,313. **Base:** Grocery buyers aged 14+. 1. Includes Fresh Food.

Fresh food has become a highly competitive segment for the major supermarkets with figure 4.2 indicating that all the major supermarkets have a lower market share of the fresh food market than their overall grocery market share. The best performer in this segment is the non-supermarket group with 30.2% share. Roy Morgan (2018) states that this is a result of the non-supermarket group such as bread shops, fruit shops, butchers, seafood retailers etc, that compete in the fresh food segment. What this also suggests is that consumers are increasingly using their purchasing power to support smaller food retailers for reasons that may include the sustainability of how they source their food.

From the perspective of food distribution, the scale of Australia makes the transport of food almost inevitable but there are inconsistencies in the production and transport of foods. Perth, sometimes referred to as the most isolated city in the southern hemisphere, has one of the largest food storage and distribution centres in the world, yet this comes with a cost. An improved understanding of the factors affecting GHG emissions, fuel use and potential vulnerabilities in the supply chain of food products will be important to their ongoing viability. Like anywhere else, what was once viewed as miracles of logistics of food distribution, getting from one side of Australia to the other are now seen as costly follies.

The Challenges of food retail and distribution in contributing to healthy and sustainable food systems

We now return to the focus we posed at the beginning of this chapter which was to explore ways that supermarkets can deliver more healthy and sustainable food. Given the stranglehold supermarkets have over both producers and consumers they are key to changes in the delivery of sustainable foods. Local food retailers, which source locally, have a more positive effect on income and jobs than a major company providing the same food. Can supermarkets do the same? The answer is possibly, although we see no evidence of a major swing in this direction. Currently such moves are driven by consumer demand, niche products and issues of margins and profits. Lang and Heasman (2015) set out three paradigms of the food system which include

1. A productionist approach.
2. The life sciences approach to health.
3. An ecologically integrated approach to health and environment.

Supermarkets are there to make a profit for their shareholders (productionist approach) rather than deliver healthy and sustainable food. When they do this, it tends to be a selling point for niche customers. Lang and Barling (2007) mapped out the environmental impact of UK supermarkets and identified many negative aspects. Debates over the ways to get supermarkets to develop more sustainable food supply systems have long raged and how to get them to engage with the ecologically integrated approach to health and environment set out above. The irony with goods such as food, which carry both a private and public goods aspect to them, is that the public good is not factored in. Traditional cost accounting hides the true or full cost of goods, there are moves to introduce full cost accounting procedures for foods, so far the work on this has come from dirty industries such as coal (Epstein et al., 2011). So short or local food chains and or organics may be good for ecological and human health (Mason and Lang, 2017) but their place on the supermarket shelf is determined by price not cost. Food needs to be reconceived as a public good not just a consumer one and the power of supermarkets needs to be maximised in delivering the social good, this does not mean they cannot continue to make a profit but that the externalities are built into the equation. Sustainability needs to be addressed as a policy issue, without this, existing inequalities grow, and new ones emerge (Oxfam, 2018).

The UK Sustainable Development Commission (2008) argued for regulation by government to ensure that supermarkets meet their moral obligations. To date little has occurred to push this policy agenda, the focus is on corporate social responsibility (CSR) and fair-trade initiatives. We are reminded of the public health approach originally set out by Geoffrey Rose that small changes across a whole population achieve more than big changes in a small section of the population (Rose et al., 2008). Similarly, for sustainable food chains the problem facing us all in the future is to achieve changes across many food products and categories not just a niche group which are sold at premium prices to affluent consumers. This is linked to debates that we do not need to grow more but change existing food growing and production practices. Berners-Lee et al. (2018) say that the current production of crops is sufficient to provide enough food for the projected global population of 9.7 billion, but this must occur within a framework of changes to the dietary choices of the majority (replacing most meat/dairy with plant-based alternatives, and greater acceptance of human-edible crops currently fed to animals). Supermarkets with their powerful position in the food chain are well placed to deliver on such future sustainable development initiatives. But will they without government policy? The Berners-Lee hypothesis means that we may have to engage with a new concept of sustainability which is not just about sourcing, but also more closely aligned to human health and global rights.

In Australia sustainability has become a concern within the states as food is transported many kilometres, often crisscrossing the country in its moves from raw product to processed goods. The challenge of such logistics has become a concern to the major retailers who when oil prices were low saw this as an issue to factor in and absorbed as a 'hidden cost', now the increased cost of oil have made this difficult to ignore. Food transport, specifically freight, remains an ongoing challenge, with pressures of rising energy costs, potential carbon prices and increasing vulnerability in food supply chains are challenging to food producers and businesses, and they have important implications for food availability, access and utilisation – and hence food security (Estrada-Florez and Larsen, 2010)~~.~~ Choices are constrained by an unequal system. Yet we cannot leave food systems to the mercy of oil prices. The dominant economic system led by supermarkets will respond when oil prices are high but revert to old ways of operating when they drop. The issues at stake are much more important including human and animal health as well as the eco-system.

Future trends

We believe that the future trends shaping grocery and supermarket expansion will come in the virtual world of internet ordering and delivery. Although currently small in overall financial terms, this is set to grow. The expansion of Amazon into home food delivery and its acquisition of Wholefoods are indicative of this trend. This offers opportunities as well as threats to sustainability. In the UK the online grocer Ocado has just sold its services and expertise to Kroger supermarkets in the US highlighting a new kind of merger and acquisition (Monaghan, 2018). It is likely that the Amazon expansion into food will herald similar models, maybe making links to local food producers at a price; this would enable it to promote local fresh sustainable food without much risk.

Conclusions: Opportunities for food retail and distribution in contributing to a healthy and sustainable food system

What is to be done about supermarkets with their power and role as the 'shock troops' of economic neoliberalism, a concept borrowed from Klein (2008)? Mason and Lang (2017) contend that we need to move to eco-nutrition informed by social nutrition to ensure health, inequality and sustainability are addressed. Eco-nutrition suggests the need to move to a food system which is locally driven, and which pays attention to the issues of local 'foodways' and ecological sustainability. All this can form the basis of a plan of action for policy to support local food provisioning. Public policy needs to constrain the influence of supermarkets in terms of the ultra-processed foods they offer as well as recognising the hidden costs or externalities associated with the model of operation.

The challenge for existing supermarket food distribution systems is to transport goods between producers and customers with the lowest possible impact on the environment, improving health, while rewarding growers and employees with fair wages and incomes. Estrada-Flores & Larsen (2010) have investigated best-practice food distribution systems. Their report shows that farm and consumer-led initiatives do exactly this. These types of systems, including farmers' markets; marketing cooperatives; community supported agriculture direct and online sales hubs, will promote shorter distances between producers and consumers.

Can supermarkets deliver more healthy and sustainable food? We believe they can, however a paradigm shift is needed. Hard-line 'productionists' are recognising the increasing need to transition to ecologically integrated thinking and practice in response to food system challenges in the coming decades. The benefits to supermarkets are at both ends of the food chain; the production and processing element results in fewer costs in transport and processing and at the retail end of the chain it appeals to customers' concerns about health and the environment. It's now difficult to find many companies or governments who doubt food's impact on health and the environment, and the role of food within sustainability.

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