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# COVID-Related Changes in Consumer Preferences and Food Value Chain Responses[1]

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## Abstract

The year 2020 saw a seismic shift in world economies, businesses and households, brought about by the COVID-19 pandemic. Movement was restricted and borders were closed. Business models had to change to reflect the new constraints. In this paper we examine how consumer preferences changed over this period and how food value chains have and might in the future respond tactically and strategically to these changes. Some suggestions for further research are made.

***Keywords:*** consumer preferences, strategic fit, responsiveness, uncertainty, COVID-19

## Introduction

2020 saw a seismic shift in world economies, brought about by the COVID-19 pandemic, and government responses to the health crisis. Initially people were asked to socially distance and to take particular care with hand hygiene. Later, households and businesses were placed into lockdown, schools and universities were closed, travel was restricted, and borders were closed. In many countries, these restrictions were imposed several times during the year, and in some countries at the time of writing they are still in place. Business income was cut substantially, people lost their jobs, and household income fell dramatically. Yet household occupants had to eat, other expenditures on utilities and rent had to be maintained, student education had to continue, and so on. Some governments stepped in and offered support and stimulus packages to various groups in society. At the same time business models had to change to reflect the new constraints.

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Many commentators have argued that the nature of the COVID-19 virus epidemic and the disruption it has caused in Australian food value chains place it in the category of a 'black swan' event (Taleb, 2001). He set out three criteria, all of which are required to be met for such an event to have occurred. These are (1) the event is an outlier and a 'surprise' (unpredicted), (2) it has an extremely large impact, and (3) 'human nature makes us concoct explanations for its concurrence after the fact, making it explainable and predictable'. Because such an event is unpredicted, there is no scope for *ex ante* analysis and management of the effects incurred by the occurrence. It all comes down to *ex post* reaction and adaptation.

The problematic condition is the first one. Our view is that a virus pandemic had been widely expected to occur at some stage, although the timing of its occurrence and intrinsic nature were uncertain and the size of its impact was unknown (just like droughts and bush fires).

For example, there is substantial evidence that the Australian Government was aware of the need to prepare for pandemics relating to human health, albeit most emphasis to date has been placed on flu pandemics. For example, the Australian Health Management Plan for Pandemic Influenza 'is a national framework for preparedness in managing an influenza pandemic and minimising its impact on the health of Australians, and the health care system (AHMPPI, 2019). Many other governments have also been preparing for the next virus pandemic to occur, such as the government of Singapore that had 'prepared for such an eventuality with a precise plan since as early as 2010' (Taleb, 2020). One would expect large firms in Australian food value chains would have contingency plans in place to respond quickly to a pandemic and would have structured their business and the whole value chain to build robustness and sustainability.

However, many small and medium sized businesses would not have the knowledge base nor the resources available to invest in such *ex ante* analysis and planning. This suggests that responses would be a mix of short-term tactical actions and longer-term strategic changes.

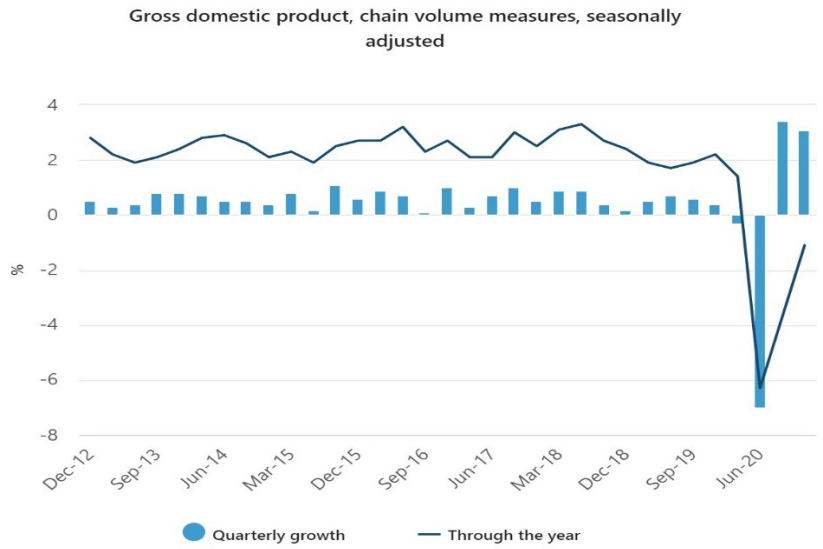
In this paper we examine how consumer preferences changed over this period and how food value chains did and might in the future respond to these changes. Some suggestions for further research are made.

## The Macroeconomic Context

Let us start by looking at the aggregate macroeconomic data over 2020. We use Australia as an example, but many other countries would show a similar pattern.

For many years, Australian Gross Domestic Product (GDP) has increased by between 2-3 per cent annually, leading to a relatively stable macroeconomic environment for households. 2019 was no different. However, 2020 was very much different, due to the wide range of impacts caused by the COVID-19 pandemic, and government responses to these impacts. As shown in Figure 1, the June quarter of 2020 saw a 7 per cent fall in GDP in spite of massive government stimulus programs and payments. Even though the economy bounced back in the September quarter (up 3.4 per cent) and in the December quarter (up 3.1 per cent) as COVID-19 related restrictions continued to ease, the net result was that annual GDP was -1.1 per cent as at the end of December. Given that Australia's GDP in 2019 was around $US1,400 billion (Trading Economics, 2021), 2020 saw some $US15 billion wiped off Australia's national income on a year-by-year basis. These extraordinary changes in the Australian macroeconomy had two related impacts on Australian households.

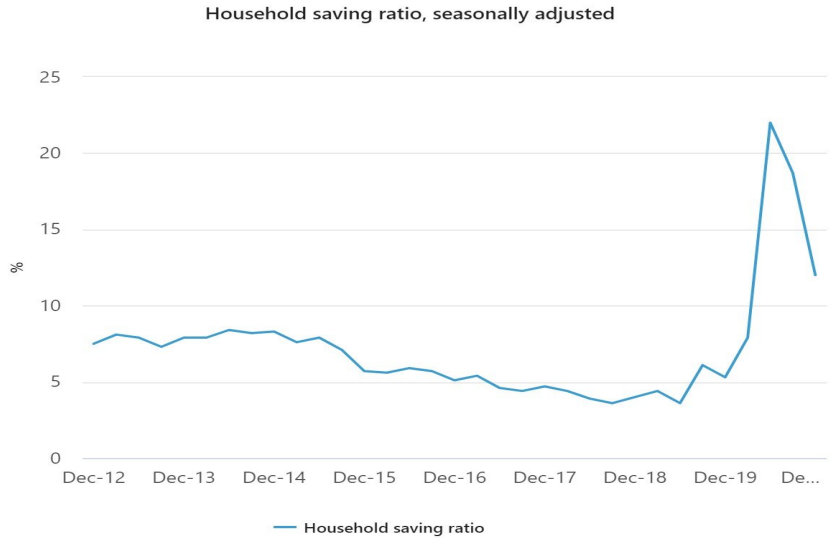
**Figure 1. Australian gross domestic product, quarterly, 2012-2020**




Source: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product December 2020

First, there was a substantial and perhaps unexpected jump in the household saving ratio. This is the proportion of household income that is put into savings. From historic lows of under 5 per cent in 2017 and 2018, the ratio reached more than 20 per cent in mid-2020. While the ratio reduced somewhat in the second half of the year, as at December it was still sitting at around 12 per cent, more than double the level of the previous five years (see Figure 2). The more of income that is saved, the less is available for household purchases.

**Figure 2. Australian household savings ratio, quarterly 2012-2020**




Source: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product December 2020

Thus, the anxiety felt by households about their health, the length and severity of COVID-19 restrictions, and uncertainty about future restrictions and future employment prospects translated into a much more cautious approach to household income management. The evidence is that most of the stimulus payment to households (including early access to superannuation accounts) was spent on paying off debt or on increasing savings. Of the millions of Australians who received the stimulus payment in March 2020, 29 per cent saved it, and 28 per cent used it to pay bills, including credit card and other debt (ABC News, 2020). Nearly 70 per cent of the stimulus went to people aged 65 and over, and 45 per cent of that group added the money to their savings (ABC News, 2020).

Second, there was both a major decline in overall household expenditure and a substantial shift in expenditure allocation across categories. As shown in Table 1, overall spending by households was 2.7 per cent down through the year. Due to travel restrictions and the closing down of some sectors of retail trade during the year, expenditure on transport services (-78.1 per cent), hotel, café and restaurant services (-29.8 per cent) and vehicle operation (-10.7 per cent) declined dramatically during 2020 compared with the previous year. Conversely, expenditure on new vehicles (22.2 per cent), alcohol (14 per cent) and furnishings and household equipment (including garden supplies) (11.3 per cent) were all up substantially on the previous year. Most of the largest changes occurred in the June quarter when restrictions were the most severe, with partial recoveries in the second half of the year.

Overall, spending on goods rose 6.2 per cent through the year. Purchase of vehicles rose to a record 31.8 per cent in the final quarter, reflecting elevated household disposable income and shifting spending patterns with continued limitations on some expenditure items such as international travel. Spending on services was down 7.8 per cent through the year. However, recreation and culture, hotels, cafes and restaurants and health all continued to rebound in the latter quarters as movement and trading restrictions eased.

These changes in expenditure patterns were particular evident in food purchases, as shown in Figures 3 and 4.

Monthly expenditure on food purchased from retailers (primarily supermarkets) jumped from around $11.5 billion in early 2020 to almost $14.5 billion in March 2020 (Figure 3). This was the "panic buying" phenomenon, where supermarket shelves were literally cleaned out for days on end (and one of the reasons for the formation of the Supermarket Taskforce mentioned later). Expenditure in this category retreated in April to almost "normal" levels, but for the rest of the year has remained about 12 per cent above 2019 levels.

Conversely, monthly expenditure on cafes, restaurants and takeaway food services followed an opposite pattern (Figure 4). From a very stable level of just under $4 billion per month during 2019 and early 2020, expenditure in this category dropped by 50 per cent in April 2020 when the most severe restrictions on movement were in place. Again, expenditure recovered quickly but only partially in May and June, and has remained under "normal" levels during the rest of the year.

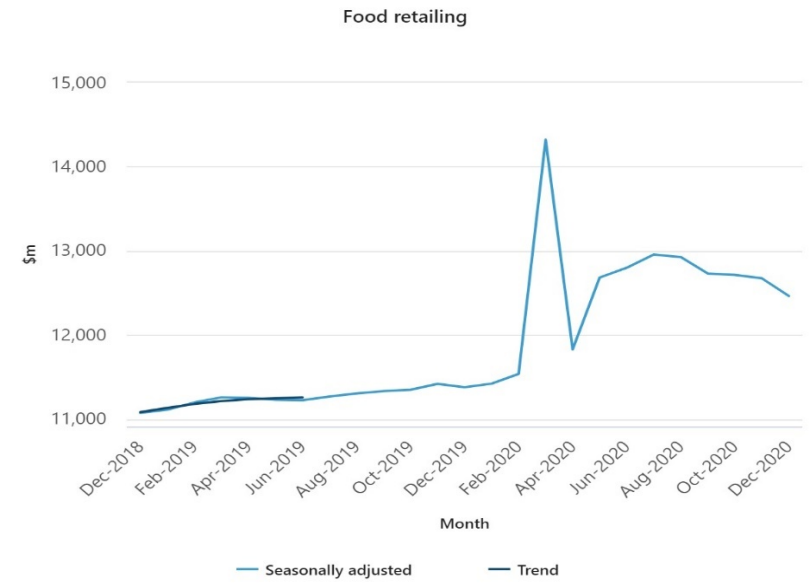
Year on year, household expenditures on the food component of dining at home were up 1.1 per cent on 2019 levels, reflecting the increase in expenditure on food purchased from retailers, while household expenditures on dining out were down 1.4 per cent, reflecting the decrease in expenditure on food purchased from cafes, restaurants and takeaway food services (Figure 5).

**Table 1. Final Household Consumption Expenditure (percentage changes), quarterly, 2019-2020**

| | Sep 19 to Dec 19 | Dec 19 to Mar 20 | Mar 20 to Jun 20 | Jun 20 to Sep 20 | Sep 20 to Dec 20 | Through the year, Dec 19 to Dec 20 | Contribution to growth, Sep 20 to Dec 20 |
|---|---|---|---|---|---|---|---|
| Food | -0.1 | 5.6 | -3.1 | 3.8 | -1.8 | **4.4** | -0.2 |
| Cigarettes and tobacco | -4.1 | -4.2 | -3.0 | -1.1 | -6.8 | **-14.3** | -0.1 |
| Alcoholic beverages | 1.0 | 2.9 | 13.1 | -0.5 | -1.5 | **14.0** | - |
| Clothing and footwear | 2.1 | -9.1 | -18.1 | 21.5 | 16.4 | **5.2** | 0.6 |
| Rent and other dwelling services | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | **1.6** | 0.1 |
| Electricity, gas and other fuel | 2.0 | -0.6 | 4.4 | 4.8 | -7.5 | **0.5** | -0.2 |
| Furnishings and household equipment | 1.3 | 1.3 | 9.7 | -0.9 | 1.1 | **11.3** | 0.1 |
| Health | 0.5 | -1.5 | -20.0 | 26.0 | 4.3 | **3.6** | 0.3 |
| Purchase of vehicles | -2.4 | -2.2 | -17.8 | 15.3 | 31.8 | **22.2** | 0.6 |
| Operation of vehicles | 0.6 | -4.0 | -25.3 | 10.3 | 12.8 | **-10.7** | 0.5 |
| Transport services | -1.3 | -14.6 | -85.7 | 50.4 | 19.3 | **-78.1** | 0.1 |
| Communications | 0.3 | 2.1 | 1.6 | 1.3 | 0.6 | **5.8** | - |
| Recreation and culture | 0.3 | -1.8 | -15.6 | 12.5 | 9.1 | **1.7** | 0.9 |
| Education services | 0.4 | 0.3 | 0.4 | 0.9 | 1.0 | **2.6** | 0.1 |
| Hotels, cafes and restaurants | 0.9 | -9.9 | -55.7 | 49.8 | 17.5 | **-29.8** | 0.8 |
| Insurance and other financial services | - | -0.4 | 0.4 | 0.7 | 0.9 | **1.7** | 0.1 |
| Other goods and services | 0.1 | -1.0 | -31.5 | 23.3 | 11.8 | **-6.5** | 0.7 |
| **Total** | **0.3** | **-1.4** | **-12.3** | **7.9** | **4.3** | **-2.7** | **4.3** |

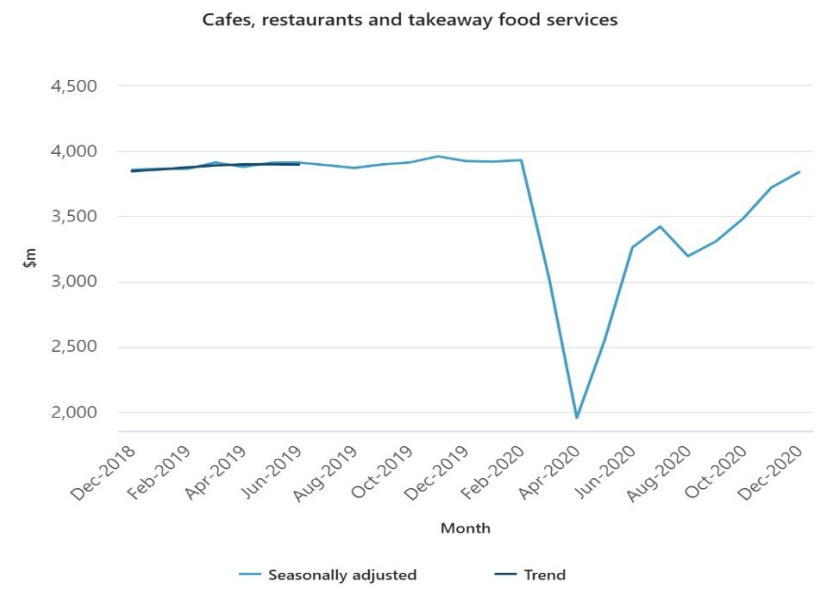
*Source*: Australian Bureau of Statistics, Australian National Accounts: National Income, Expenditure and Product (December 2020), Quarterly estimates of key economic flows in Australia, including gross domestic product (GDP), consumption, investment, income and saving

**Figure 3. Australian expenditures on food retailing, quarterly, 2018-2020**



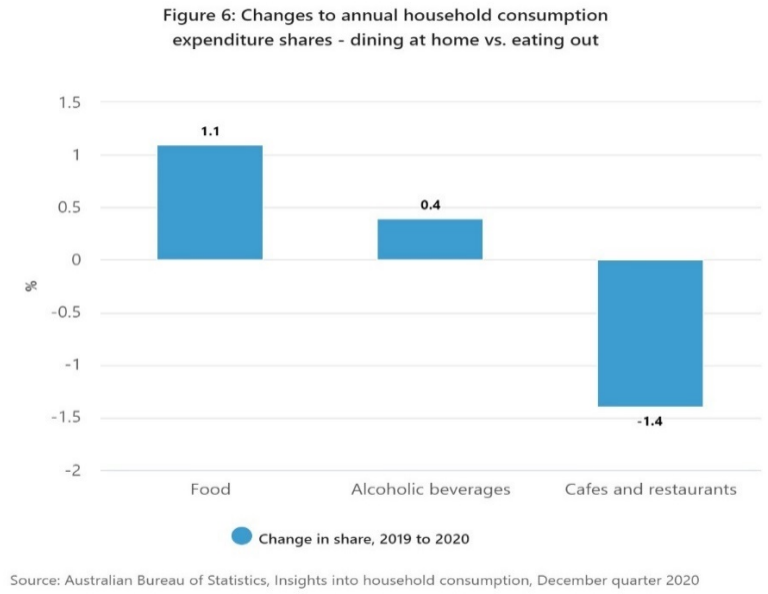

Source: Australian Bureau of Statistics, Retail Trade, Australia December 2020

**Figure 4. Australian expenditures on cafes, restaurants and takeaway food services, quarterly, 2018-2020**




Source: Australian Bureau of Statistics, Retail Trade, Australia December 2020

**Figure 5. Percentage changes in household consumption expenditure shares on food purchases, 2020**




## The Changing Nature of Consumer Preferences

There has been substantial work done by many different types of organisations in many different countries on what changes we can expect in the future, and therefore on how businesses should react and adjust their business models and strategies. Some of these organisations are multinational institutions such as FAO (FAO, 2018), OECD and the World Bank; others are government agencies such as CSIRO in Australia (CSIRO, 2012) and USDA in the United States; and others are large private sector advisory firms such as PricewaterhouseCoopers (PWC, 2017), KPMG (Ferguson, 2018), Rabobank (Singh, 2017) and Ernst and Young (EY, 2017). Many of these reports talk about *"megatrends".* A megatrend is a significant, long-term shift in environmental, economic and social conditions that will play out over coming decades. Six megatrends are common across most of these reports: changing demographics; a wealthier world; changes in consumers' tastes, preferences and concerns; increased demand on resources and increased energy consumption; the changing climate; and technological advancements.

Long-term changes in consumers' tastes, preferences and concerns are thus important determinants of future economic growth. The question is whether the events of 2020 have altered these expected long run trajectories.

Every year, Euromonitor International identifies *"emerging and fast-moving trends"* that are expected to be the big drivers of consumption behaviour in the year ahead. These trends provide insight into changing consumer values, exploring how consumer behaviour is shifting and causing disruption for businesses globally. The 2021 list has been reported recently in Westbrook and Argus (2021).

Below is a listing of the top ten consumer trends for 2021 (in alphabetical order). It is stated that the selected trends are based on consultation across all of Euromonitor's 15 global offices, but the list obviously has a very developed-country focus.

**Table 2. Euromonitor's top ten consumer trends for 2021**

| |
|---|
| Build back better - a second chance to create a better future |
| Craving convenience - from always-available to pre-planned experiences |
| Outdoor oasis - open air gives trapped consumers an escape |
| Phygital reality - physical and digital worlds collide |
| Playing with time - newfound flexibility switches up schedules |
| Restless and rebellious - people versus politicians |
| Safety obsessed - priorities shift to safety and hygiene |
| Shaken and stirred - rising above adversity |
| Thoughtful thrifters - thinking with a recessionary mindset |
| Workplaces in new spaces - recreating the office environment remotely |

*Source*: Westbrook and Argus (2021)

## Key Words for Food Value Chains

The list above covers all types of consumers in all types of consumer markets. From the point of view of food value chains, what are some of the key changes in consumer preferences noted above? They are highlighted below. Obviously, different consumers may follow multiple trends at the same time and may prioritise different preferences at different times, depending on the context of their decision-making.

**People**

- prioritising ***health-conscious products and services***
- offering ***increased flexibility***

**Place**

- increasing moves to ***remote working***
- preserving ***a swift and seamless shopping journey*** across all channels

**Planet**

- prioritising ***sustainable products and services***

## How Should Value Chains Respond? Short-Term Changes in Tactics

When the full implications of the COVID-19 hit, food value chains had to make decisions about new business models and new ways of doing business within a matter of weeks. While many of the larger supermarket chains were deemed essential services and remained open for business, many small and local food businesses had to either shut their doors or drastically alter what and how they offered goods

and services to consumers. There was no time for detailed examinations of appropriate strategies, no time for test marketing, no time for checking the financial implications of a possible change.

Overall, the resilience of the food system to a virus pandemic in terms of its ability to continue to meet food consumption needs in Australia appears to have been strong. Even so, it rested on the need for collaboration between some key chain members and a limited but decisive government intervention. The *ex-post* response by the federal government needed to be rapid, well directed and proportionate. It also required a whole-of-chain response or at least a temporary club response (Fleming et al., 2018) of key members in the chain, often in collaboration with government agencies.

One major initiative was the formation of a Supermarket Taskforce - a working body to focus on cross-industry collaboration. The Taskforce was granted temporary authorisation by the Australian Competition and Consumer Commission to co-ordinate and collaborate without falling foul of competition law (Powell, 2020). While the taskforce was strictly prohibited from discussing issues such as product pricing, the group shared their plans and best practices across issues like in-store cleaning and social distancing. A follow-up arrangement involved setting up a food provision service to approximately two million vulnerable Australians if they were unable to leave their residences. The companies' ill-suited online delivery systems could not handle this challenge. Within a matter of days, the supermarkets collaborated with Australia Post and logistics company DHL to organise an $80 box of essentials which the postal service would courier to houses in need (Powell, 2020).

## How Should Value Chains Respond? The Longer-Term Concept of Strategic Fit

Our view is that those businesses and value chains who made good decisions over the course of 2020 had knowledge and experience of using the supply chain management concept called “strategic fit” (Chopra and Meindl, 2013; Mounter et al., 2016).

Strategic fit in the context of a food value chain is essentially the choice the value chain has to make about what types of goods and services it offers to the market - whether it should be a “responsive” value chain or a “low-price” value chain. It does this by weighing up its knowledge of the requirements of consumers and their willingness to pay (WTP) for different sets of product or service attributes of different qualities, against the capacity of the value chain to deliver those different sets of product or service attributes.

A responsive value chain creates and offers a range of attributes (like the attributes highlighted above from the Euromonitor report) that consumers have a strong preference for and thus a higher WTP. It costs more to build up its capabilities to increase responsiveness, so it requires a premium from the market to cover those extra costs.

A low-price value chain is one that operates at the lowest possible cost per unit sold that enables it to keep prices low to consumers. It lowers cost by eliminating some of its responsive capabilities, thereby reducing its payoff per unit.

There is also a strong link between the level of uncertainty in the market and the appropriate type of strategic fit (Chopra and Meindl, 2013). If there are low levels of uncertainty in demand and in supply, a low-cost strategy is all that is needed. Sufficient inputs can be sourced at relatively stable prices, and sufficient output can be produced and sold to generate relatively stable revenue. The value chain can therefore focus on undertaking the production and transformation process at least cost.

However, a value chain with a high level of implied demand uncertainty and/or implied supply uncertainty would be better suited to a responsive value chain that is more able to meet the needs of the customers it targets. The more uncertain is the availability or price or quality of a good or service, the more attributes consumers require to be able to minimise the impacts of that uncertainty (Chopra and Meindl, 2013). This means an ability to:

- respond to a wide range of quantities demanded,
- meet short lead times,
- handle a variety of products,
- ensure food safety,
- build innovative products,
- meet a high service level, and
- handle supply uncertainty.

The "production possibility curve" and the "iso-revenue curve" are tools economists can use to advise on the optimal type of strategic fit, given knowledge of uncertainty, capabilities and returns from the market. Note that different parts of a value chain may have differing levels of responsiveness.

These concepts can be shown in Figures 6 and 7. Let us assume a product can be produced in two ways in a particular value chain, either in a low-cost configuration, or in a responsive configuration, or in some combination of the two options. This assumes some flexibility in the value chain transformation process. The production possibilities curve traces out the maximum amount of each type of product that can be produced with a fixed set of inputs. It is often called a "frontier" to emphasise the fact that there might be a range of levels of efficiency in the firms producing this product combination. The most efficient firms will be close to or on the frontier, the less efficient firms will be under the frontier.

The iso-revenue line traces out the different combinations of outputs which produce the same aggregate revenue, given the per unit returns for each type of output available from the market. The further the iso-revenue line is from the origin, the higher the level of aggregate revenue.

The tangency of the production possibilities frontier and the iso-revenue curve denotes the optimal combination of the two types of product to produce – the maximum quantities of outputs from a given set of resources which returns the highest level of revenue.

In Figure 6, if consumers do not place any value on responsiveness, there is no price advantage for the product coming out of the responsive channel. Both products receive the same unit price and hence the relative price line (iso-revenue line) is at an angle of 45 degrees to the vertical and horizontal axes. Much more of the low-cost product, and much less of the responsive product, would be produced given the technical capabilities of this value chain as shown in the Figure.

In Figure 7, if the final price paid for the product by the consumer includes a premium for responsiveness, the payoff per unit is higher in the responsive value chain. Thus a smaller volume of production is required to generate the same level of revenue. The iso-revenue line has a flatter slope, showing the different relative payoffs per unit of product. Compared to the situation shown in Figure 6, much less of the low-cost product, and much more of the responsive product, would be produced using the same capabilities of this value chain.

How do we apply these concepts to the challenges raised by the COVID-19 pandemic?

**Figure 6. Strategic fit with no premium for responsiveness**

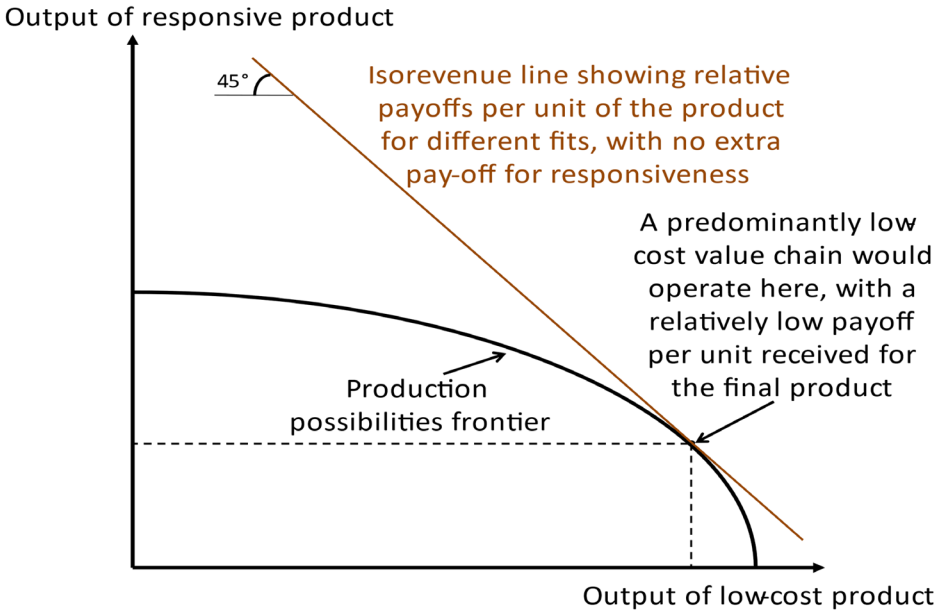
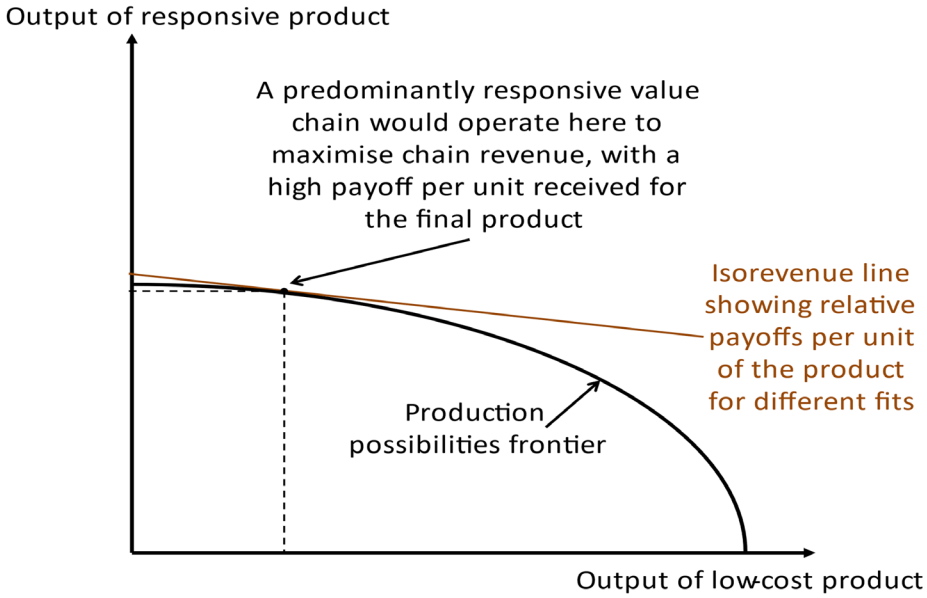



**Figure 7. Strategic fit with a premium for responsiveness**




The Euromonitor Report (Westbrook and Argus, 2021) clearly shows that consumers want to do more shopping online to minimize their contact with others: "Companies must preserve the swift and seamless shopping journey across all channels", and "The fear of infection and increased health awareness drive demand for hygiene products and pushes consumers towards contactless solutions to avoid exposure".

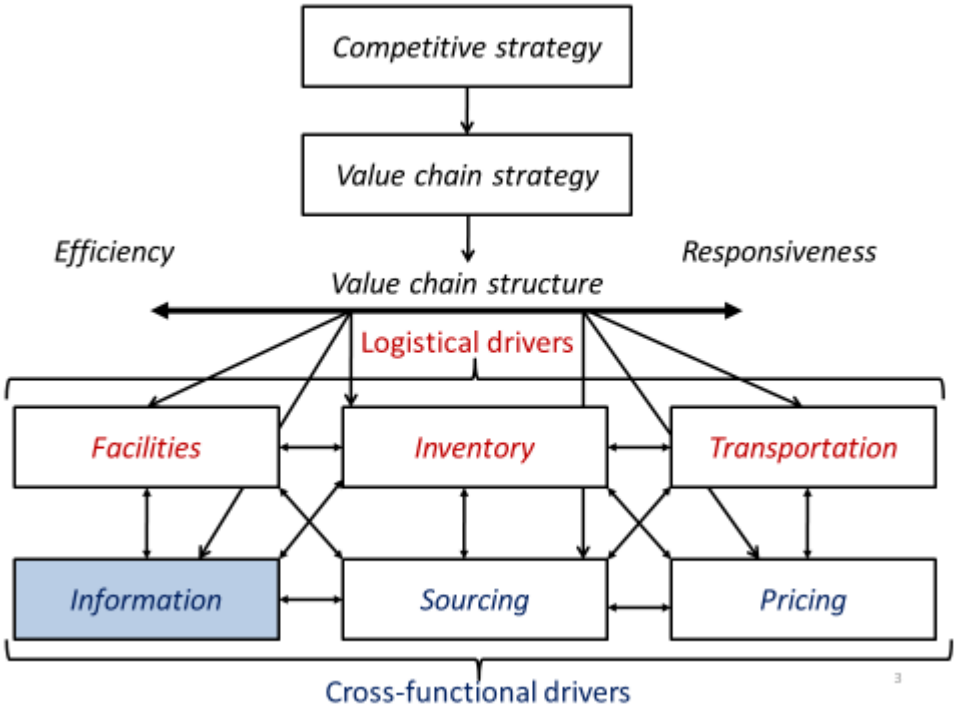
Thus, consumers are requesting a different set of product and service attributes that relate to responsiveness – short lead times, a higher level of service delivery, safer food. The relevant value chains have to find out whether they can reorganize their logistics functions to deliver a product online (either

internally or through out-sourcing), whether it will cost more to do this, and if so, whether consumers will pay more for this extra responsiveness.

As another example, consumers have clearly indicated that they have an increasing awareness of the health attributes of the food they eat and that they are prioritising health-conscious products and services. Thus, again, they are requesting a different set of product and service attributes, this time that relate to product quality and safe food. The relevant value chains have to find out whether they can reorganise their sourcing and production functions to deliver food with "healthy" attributes, whether it will cost more to do this, and if so, whether consumers will pay more for it.

These are not simple decisions. The supply chain management literature (Chopra and Meindl, 2013) tells us that all of the functions provided by food value chains are inter-related, as shown in Figure 8. Within the value chain, everything depends on everything else. A change to offering on-line purchases of goods and services means not only that all of the logistics functions have to be recalibrated, but also in principle these decisions may have flow-on effects to the sourcing, pricing and information collection and sharing functions.

**Figure 8. The drivers of value chain management in relation to strategic fit**




*Source*: Chopra and Meindl (2013, Figure 3.1)

There are other challenges within the value chain that impact on the ability to make such changes and/or on the outcomes if such changes are made. One relates to the type of good or service being offered - is it a staple, everyday product or service, or a luxury product or service? Is it a mature product or a relatively new product? Is it perishable? Increasing product variety and shrinking life cycles make these sorts of strategic fit decisions more complicated.

Another challenge relates to the structure of the value chain and the way it is governed. If it is a vertically integrated chain, coordination is easier as presumably the integrated firm has common objectives across the various functional areas. If ownership is fragmented, objectives at the various stages are likely less to be well aligned and coordination of strategic fit decisions will be harder.

Finally, there are challenges arising from outside the value chain, in what we call the "enabling environment". These include: increasing uncertainty regarding globalisation and trade; changing technologies and business environments; climate change; climatic variability; and sustainability concerns. Most of these challenges are mentioned in the literature about megatrends, and most relate to the discussion earlier about "fat-tailed distributions". Again, these challenges make coordination of strategic fit decisions more difficult.

In spite of these challenges, some large-scale value chains have clearly said "yes" to the questions of whether they can reorganise their logistics functions to deliver a more responsive set of product attributes, and whether their consumers will pay more for this extra responsiveness. For example, there have been huge investments made in setting up new online platforms across many food product categories. Smaller food retailers, cafes and restaurants had to move into take-away food, home delivery etc. In these smaller scale networks, there was a huge growth in the use of home delivery services (albeit with some negative social effects). As another example, the size of the markets for health-conscious goods and services, such as the organic food market, expanded substantially in 2020.

## Where to from Here?

The above discussion raises some pertinent questions for value chain researchers.

Are the swans on the pond black or white? Is an event like the COVID-19 pandemic truly random or just an outlier that is typical of a fat-tail distribution of outcomes. Even if the latter, analysing and managing these risks to the system *ex ante* is next to impossible for individual firms in the chain acting alone, which otherwise are able to handle uncertain outcomes with well-behaved distribution functions either independently or through contracts with other members of the chain. What is the best way to frame an *ex-post* response that is rapid, well directed and proportionate, and whole-of-chain? Is a temporary club response (Fleming et al., 2018) of key members in the chain, often in collaboration with government agencies, a model that works (like the Supermarket Taskforce)?

Second, willingness to pay for responsiveness attributes is always a key driver of strategic fit decisions, as it determines the slope of the relevant iso-revenue curve. Yet ascertaining consumer WTP is a costly and time-consuming exercise. Last year has shown some substantial changes in consumer attitudes and revealed preferences, and many food value chains have made major changes in their business models in response. But are these WTP changes temporary or long lasting? Are the changes we have seen in 2020 and predicted for 2021, very different from the key megatrend of "changes in consumers' tastes, preferences and concerns", or simply a variation on the same theme?

Third, our simple and stylised micro-economic representations of how value chains should make important decisions aid our understanding of the issues involved. But how close are they to real-world decision environments where different firms with different objectives and resources all must interact and collaborate to produce and deliver the wide variety of goods and services required by consumers? More work is required on the analysis of risk in food value chains and how it can be better managed at different

levels of these chains. The use of "expected iso-revenue curves" is a move in this direction (Mounter et al., 2016)

Finally, even if we focus on just one function or choose just one type of new business model, such as the rapid and substantial shift to e-commerce, some recent reviews (Li, 2020; Sao, 2020) indicate huge barriers to be overcome (especially in developing country markets) in terms of the lack of uniform quality description systems and subsequent information asymmetry. What new processes and systems (sometimes called "chain goods" (Fleming et al., 2018)) need to be in place before these new business models can be implemented and operated successfully?

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