

**Future Trends Report****Based on Analysis of the Team's Chosen Community / Organisation in Mid-Term and Final Evaluation****Community / Organisation Studied: F&B Industry (Food Supply)****STEP 1. Identify Challenges**

Read the Future Scene carefully and generate ideas for challenges, concerns, and possible related problems. Choose the 5 most important challenges and write them in the space provided. Include applicable research with appropriate in-text citations.

**Challenge #1:**

[Observation] Workers in the food supply sector we interviewed expressed concern over the fact that trade with other countries may continue to be disrupted post-pandemic, and are worried that trade with certain countries may not pick up which would result in their company having to trade with alternative countries, causing slower deliveries and higher costs.

[Why] The disruptions to supply lines and trade which the pandemic has brought has caused many around the world to choose to limit or minimise trade with foreign countries, and also renewed calls by many around the world to 'end' globalisation. As we welcome the post-pandemic world with increased vaccination rates, we see that many countries are likely to take up more protectionist policies and not conduct global trade to the level which was seen pre-pandemic, especially in terms of agricultural products. The food supply industry in Singapore would be greatly affected by something like this happening due to the reliance on global trade, especially imports, to bring in food.

[Research] According to a study by the Brookings Institution, protectionism in the US, UK and European countries has been significantly increasing, and many of these countries are likely to adopt more protectionist policies post-pandemic, in the name of national security. This would mean less global trade especially with Asia, with more goods being consumed and used locally. In 2019, the US, UK and France alone contributed to around 27% of Singapore's food imports, according to a piece of research done by the United States Department of Agriculture (USDA). These three countries are amongst the countries expected to lessen international trade post-pandemic, which comes as a reasonable worry from local food supply countries as a significant amount of food imports could be lost post-pandemic. This shows that the rise in protectionism in Western countries, and the decrease in trade brought by it, is a significant challenge which would be faced by the food supply industry in Singapore.

**Challenge #2:**

[Observation] Amongst interviewed people, they expressed concern that as overseas supply decreases, local supply may be insufficient to 'fill the gaps' and allow for more reliance on local-produced food in the case of global food shortages.

[Why] COVID-19 has not just increased protectionist policies, but has also shown the dangers of food shortages. In the past few years, Singapore has been hit a considerable number of times by a sudden stop of imports of certain types of foods from other countries. For example, earlier in 2021, Malaysia had a shortage of eggs due to a Salmonella outbreak in farms. This affected Singapore's egg supply, which largely came from Malaysia. On top of these, food shortages caused by COVID-19 caused many Singaporeans to realise the need for more self-sustainability in producing food. In order to prevent severe price hikes and food shortages, Singapore needs to work to increase local production rates and increase our self-reliance when it comes to food. On top of this, with rising protectionism worldwide, Singapore also needs to increase local production to 'cover up' for lost imports.

[Research] According to a study by the S. Rajaratnam School of International Studies (RSIS), Singapore produces around merely 10% of food locally. With the population expected to increase to around 7 million by 2030, there is a need for local production to increase to meet demands. According to the same piece of research by the RSIS, a sustainable amount of local food productions in Singapore would be around 30%, a number which the government hopes to hit by 2030. Yet, according to data on Singapore's food imports, the amount of food imported has increased, instead of decrease, over the past 10 years, This shows that the lack of local food production, is a challenge which would be faced by the food supply industry.

**Challenge #3:**

[Observation] Amongst the people we interviewed, another common concern which was expressed was also the possible rise of food safety standards post-pandemic. They were concerned that even though COVID-19 has ended, safety standards for food processing will greatly increase around the world, to prevent spread of diseases in the future, because of food.

[Why] With COVID-19, a revelation was made to the food supply sector that the transmission of diseases, in this case COVID-19, through processed and frozen food alike was entirely possible. With strains of COVID being detected in foods like frozen fish, it raised concerns worldwide that COVID could be spread through frozen and processed food, which turned out to be true. Even as we move into the post-pandemic world, this concern still remains — that outbreaks of diseases in the near future could very well be caused by a spread through frozen and processed food, which is an integral part of almost every person's diet in today's world. As such, the food supply industry has recently come under incredibly large scrutiny to uphold high food safety standards, to ensure minimal human error in the preparation of food, such that the chance of a disease of any sorts will not be passed down through the food. This also ignited concerns in the food supply industry that the increased standards would cause problems in terms of labour, causing either a shortage of labour, or having to hire more people to uphold these standards.

[Research] According to a study, frozen and refrigerated foods have been widely overlooked as potential vectors in policy frameworks and risk mitigation strategies. Yet, cases of food-borne diseases have been increasing in recent years. Recently, during the COVID-19 pandemic, food transmission evidence has been disclosed in China by the detection of COVID-19 on frozen foods, including their packaging materials and storage environments, with two re-emergent outbreaks linked to contaminated food sources. Moreover, the food cold-chain also promotes contamination because laboratory studies showed that SARS-CoV-2 remained highly stable under refrigerated and freezing conditions during 14-21 days. As a result, at least nine incidents of food contamination have been reported across the country, where SARS-CoV-2 was detected on imported foods, mostly on their packaging materials, showing that even frozen food is prone to contamination and food is one of the main sources of COVID-19 infections. This evidently shows that diseases can be spread through frozen and processed food, which have been enhancing calls for higher safety standards in the food supply industry.

**Challenge #4:**

[Observation] A possible problem that could occur after the pandemic ends is that small food businesses and suppliers will face stiff competition from food giants such as Lazada or Shopee. People will be too used to buying groceries and food online, that they will not buy from these small companies.

[Why] Due to the pandemic, people have grown accustomed to buying food and groceries online. When the pandemic subsides, people will not get out of the habit and most likely will still get their food delivered instead of eating out or shopping at the malls. Because of this, businesses might lose some of their customers due to the inconvenience that they may create. Delivery Prices will come down after the pandemic subsides. This makes an upside to staying at home and ordering food. Businesses that do not operate online will suffer tremendously.

[Research] According to The Washington Post, Fabric, a fulfillment company that helps retailers with digital strategy, reported that 70 percent of the consumers it surveyed said they will probably continue shopping online for groceries. By the end of the year, it estimates that more than 10 percent of Americans will continue to shop online. By now, people have had 5,6,7,8 experiences online, and the longer this goes, the more comfortable they get, Thrive Market chief executive Nick Green reported. This shows that it will be virtually impossible to completely shut down online shopping and force people to go to malls and shops.

**Challenge #5:**

[Observation] Finally, another concern raised by those in the Food Supply Industry was with the decreasing number of people taking part in agricultural activities around the world, supply of food worldwide would greatly dip, and exports to Singapore will hence decrease.

[Why] This naturally comes as a worry to us, as most of our food is imported from other countries. Yet, in the American and Asian countries, rapid urbanisation has been taking place. This has caused many young adults whom were born into families which farm and conduct agricultural activities, to move into bigger cities and not carry on the farming businesses of their parents. Furthermore, with the expansion and creation of cities, many former farming areas are now being converted into cities and centers of economic prosperity. With all these factors, there has been a significant drop in food production, especially agricultural activities, in these rapidly developing countries. This is fuelled by the fact that their populations are also rapidly increasing, which would directly translate into a drop of exports of food to other countries.

[Research] According to employment statistics from China, a country which traditionally exports large amounts of food and accounts for a significant amount of Singapore's food imports, the number of people in the agriculture industry has sharply decreased by more than 13.5% in the mere span of ten years. In the US, where large scale agricultural activities take place, the number of farms has fallen by almost 200,000, likely due to the aforementioned reasons.

## STEP 2. Craft the Underlying Problem

Using the challenges listed in Step 1, identify a problem of major importance to the chosen community / organization in the future. Write your Underlying Problem making sure your question clearly explains the action that will be taken and the desired results/goal of that action.

Incorporating Challenge(s) #1, #2, #5

### **Underlying Problem:**

Given that there is a high probability of the Food Supply Industry being subjected to higher demands despite having lower supply, it appears that the Food Supply Industry's sustainability might be threatened. How might we improve the Food Supply Industry as a whole, so that it can adequately meet consumer demands in the post-pandemic world?

**STEP 3. Produce Solution Ideas**

Generate solution ideas to the Underlying Problem in Step 2. Choose the 5 most effective solutions and write the elaborated ideas in the space provided. Include applicable research with appropriate in-text citations.

**Solution #1: Increasing government funding for local agricultural activities**

We, as a food supply company, would lobby for the government to increase funding for the development of local agricultural activities, up by around twice from the current amount of \$60 million. With such increased funding in place, the government would be able to expedite the process of producing 30% of our local food consumption. Funding would be increased for farms and companies using technology to grow plants and conduct agricultural activities, such as farms growing plants with hydroponics. This would allow such companies to increase current amounts of crops planted, or experiment on other more efficient ways of production. These would directly translate into an increment in the amount of food produced locally by allowing for more agricultural activities to take place. Eventually, this funding would be able to help ensure that local agricultural activities can be sustained, and will be able to contribute directly towards the production of food locally.

According to an article by the Accion Opportunity Fund, funding for farmers, farms and agricultural activities bring large amounts of help, being able to allow farmers to purchase relevant equipment which is needed. According to a Straits Times article, sums of around \$400,000 are needed to set up a hydroponics farm. This shows that large amounts of funding are in fact needed for setting up such a farm, and it will in fact be useful for them.

**Solution #2: Trade deals with foreign countries to maintain food supply**

We will lobby the government to sign contracts with foreign countries for trade deals. With such deals initiated, maintains our supply of food and varieties of food and resources obtained. Through this method we will also build good relationships with other foreign countries, leading to lasting effects of contracts and trade deals between us and we will be able to meet consumer demand in the long run.

Trade deals between us and foreign countries will ensure more supply of food.

With more trade deals in foreign countries, we can obtain various resources and food that we need but do not have and also maintain our food supply. We will be able to meet consumer demands through this method because we will have enough food supply and also have various choices for consumers to choose from.

Agreements for trade deals with other countries could take place anywhere as it is a signing of a contract and would take place on the timeline of 2027 onwards.

**Solution #3:**

We, as scientists, will carry out experimentation on genetic modification of plants and animals to produce certain health benefits and special traits, for example, making fish reproduce faster such that more fish can be produced and be sold. This will reduce the chances of food suppliers having to increase cost prices to meet the high demands.

This genetic modification would be made to reproduce and then be sold throughout the world to reproduce even more. We will try to find even more scientists to also help out in this experimentation. We will make sure to check if the modified food will cause any diseases or any harm to humans, as safety of the consumers will be of utmost importance. We will also make sure the modified food is hygienic.

Other scientists around the world is also encouraged to do this experimentation and please make sure to report any news about the modified food you have found out about to us. We will provide enough money for the resources needed. This will allow us to take lesser time to find a way to modify the food. According to a website on genetically modified organisms, GMO, stated that GMO crops have significantly increased crop yields and simultaneously decreased pesticide use, allowing us to produce more food with lesser inputs. According to another website on whether GMO decrease cost price of food, it states that GMOs lower expenses for farmers and lower the price of food. Modified crops require fewer resources. GMOs are also more durable which leads to bigger yields. This lowers the cost of production for farmers and therefore lower the price of food for consumers, thus more people are able to enjoy the modified food for a cheap price with the farmers still earning profit. According to an article by bio.org, genetically modified food will be an important tool for feeding a growing population that is expected to reach 10 billion people by 2050, thus GMO is researched, developed to address this problem of shortage of food.

**Solution #4:**

We will lobby to the government to recommend the use of technology in agricultural activities in Singapore to increase the supply of the food industry. Using the power of innovation, technology can do wonders in the helping out of the growing of crops. Besides hydroponics, Artificial Intelligence (AI) can achieve precision by calculating the entire area of the field.

According to a post by the National Institute of Food and Agriculture, agriculture routinely uses sophisticated technologies such as robots, temperatures, moisture sensors, aerial images, GPS technology. These advanced devices and robotic systems to be more efficient and environmentally friendly.

There are many reasons to incorporate AI into agricultural activities. According to the same post, the benefits of using AI to help in the growing of crops is because of higher crop productivity rate, reduced impacts on natural ecosystems, less runoff into rivers and groundwater, etc. Based on another article by AdvanTech Consulting, AI is able to do better than a human ever can. According to the article, AI can detect pests, weeds, or even possible diseases in a large area of land. More advanced technology uses sensors to collect information about the soil and water., allowing farmers to determine the right time to irrigate their farms. Furthermore, drones are able to do all the work. The drones are able to scout crops to collect data to be analyzed by the farmers. All these actions make it much more convenient and will eventually result in higher crop productivity. The overall effect technology will have on crops is that time management can be improved, and protect the ecosystem by using less fertiliser, at the same time, produce healthier crops, all stated by the Scientific American.

**Solution #5:**

We will lobby governments to distribute kits to grow vegetables in most, if not all countries around the region, and push for the greater use of technological and more efficient methods to grow vegetables at home. With such support from the government, an increase of food supply and demands met by the Food Industry would be seen.

Families and households will be trained, encouraged and enabled to grow their own vegetables in their homes. This can take place by providing the families with kits to grow their own vegetables, explaining the steps to them clearly.

The planting kits will ensure that the plants will be able to grow in a healthy and safe environment. Growing our own vegetables will help to increase the supply of food and can be done easily at home anytime. It also is very cheap and governments do not have to waste a lot of money trying to increase the food supply to meet rising demands.

According to the Strategist, which has listed out the best garden kits for vegetables, some garden kits are even self-sustaining. For example, an NYC-based gardening store called The Grow Room has designed a Salad Garden Box Kit for growing lettuce at home with a garden kit that uses a "wicking method" to deliver water and nutrients and water to the plants roots directly. It also grows vegetables 30% faster than in soil. This shows that garden kits used to grow plants at home are safe and healthy to grow plants.

According to the BMC, studies made in Africa, Asia and Latin America recognise that home gardening makes recognisable positive impacts towards addressing food security and malnutrition. It also benefits the environment by reducing number of trees cut down for plantations, thus reducing our carbon footprint. However, the price for these kit range from the price of \$68 to the high price of \$246.



### STEP 4a. Select Criteria

Generate criteria to determine which solution idea does the best job of solving your Underlying Problem and/or addressing the Future Scene situation. Select the 5 most important criteria for measuring solution ideas and write them in the spaces provided.

**Criterion #1:**

Which solution is the most effective in increasing supply of food so that the food supply industry can meet rising demands?

**Criterion #2:**

Which solution has the most lasting effects on the food supply industry such that the industry is able to cope with demands in the long run?

**Criterion #3:**

Which solution is the greatest improvement over current efforts to meet demand?

**Criterion #4:**

Which solution is easiest to carry out in order to adhere to problems with food supply?

**Criterion #5:**

Which solution cost the least amount of money to carry out?

**STEP 4b. Apply Criteria**

List the solution ideas from Step 3 on the grid. Use each criterion to rank the solutions on a scale from 1 (poorest) to 5 (best). The weighting for one important criterion may be doubled if necessary.

Step 3 Sol'n #	Solution Idea	Criteria					Total
		1	2	3	4	5	
#1	Increasing Government funding for local farming activities	5	5	3	4	2	19
#2	Establishing trade deals with more foreign countries	2	2	2	2	5	13
#3	Genetic modifications of plants and animals	3	1	5	1	1	11
#4	Incorporating technology into agricultural activities	4	4	1	3	4	16
#5	Encouraging people to grow their own vegetables	1	3	4	5	3	16

## STEP 5. Develop an Action Plan and Evaluate its Feasibility

Develop your top-scoring solution idea into an Action Plan. Thoroughly explain how the Underlying Problem is solved, how the plan will be implemented, and how the community / organisation will be affected. Explain how this Action Plan is feasible with secondary research consulted, preferably also with primary research (feedback from chosen community / organization)

### Action Plan derived from Solution #1

We, as a food supply company, would lobby for the government to increase funding for the development of local agricultural activities, up from the current amount of \$60 million. With such increased funding in place, the government would be able to expedite the process of producing 30% of our local food consumption locally. More funding for farms and companies using technology to grow plants and conduct agricultural activities, such as farms growing plants with hydroponics would be provided. This would allow such companies to increase current amounts of crops planted, or experiment on other more efficient ways of production. These would directly translate into an increment in the amount of food produced locally by allowing for more agricultural activities to take place. Eventually, this funding would be able to help ensure that local agricultural activities can be sustained, and will be able to contribute directly towards the production of food locally. **Given that there is a high probability of the Food Supply Industry being subjected to higher demands despite having lower supply, it appears that the Food Supply Industry's sustainability might be threatened. How might we improve the Food Supply Industry as a whole, so that it can adequately meet consumer demands in the post-pandemic world?**

In the post-pandemic world, Singapore is likely to face a food problem, where the Food Supply Industry is being subjected to higher demands despite having lower supply. We, as a Food Supply Company, by lobbying the Government to provide more funding to companies and farms, will improve the industry to increase supply amounts such that consumer demands will be met. With the increase in funding, development of current technologies can be expedited, and farms as well as companies can use relevant funding to invest in technology, such as better monitoring systems or drones and robots to aid in the planting and harvesting of crops. Companies and farms will also be able to increase their farm areas to plant more crops and hence increase current production amounts. All these are able to contribute, both directly and indirectly, towards an increment in the amount of food production.

### Implementation Schedule

First, we plan to conduct dialogue sessions with lawmakers, Ministers and influential people in Singapore's political scene on both sides of the bench, to convince them to put an increment of agricultural funding for discussion not just in Parliament, but also within the Food Supply Industry. We hope to achieve this by around 2023.

Next, with the relevant debates and discussions carry out, we would assist lawmakers in planning out an increment which fits the country's budget for the year.

Finally, we would request for the increment to be tabled along with the nation's budget, hopefully for the year 2024, and get the industry to encourage respected elected representatives to vote in favour of the budget.

### **Evaluation of the action plan**

In the execution of this action plan, a likely issue faced would be the lack of public support. The public may not see the need to take such an action and fund such a development, which is likely to be costly. However, with the support of lawmakers, we will use the internet to explain the importance of such an increase in funding, showing how crucial it is towards ensuring not just the sustainability of the food supply industry, but also the food safety of Singapore.

With increased funding towards the local agricultural sector for development, supply of food would be able to increase. With this increase of the local supply of food, the Food Supply Industry would be able to have sufficient supply to meet rising demands in the post-pandemic world. Even as protectionism increases and food imported decreases, the Food Supply Industry would still be able to get a supply of food from local producers, ensuring that its sustainability and survival.

## Bibliography

Cite the resources you consulted using the APA format.

### List of References:

David Dollar (2020): *The future of global supply chains: What are the implications for international trade?*  
<https://www.brookings.edu/research/the-future-of-global-supply-chains-what-are-the-implications-for-international-trade/>

The US Department of Agriculture: A Report on Singapore's Food Imports  
[https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Exporter%20Guide Singapore Singapore 12-31-2020.pdf](https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Exporter%20Guide%20Singapore%20Singapore%2012-31-2020.pdf)

Singapore's '30 by 30' strategy: Can Food Self-Production Be Achieved?  
<https://www.rsis.edu.sg/rsis-publication/nts/singapores-30-by-30-strategy-can-food-self-production-be-achieved/#.YRpmFS2w3Uo>

Singapore's Population White Paper (2013)  
<https://www.strategygroup.gov.sg/media-centre/population-white-paper-a-sustainable-population-for-a-dynamic-singapore>

Knoema: Singapore Food imports and foreign trade  
<https://knoema.com/atlas/Singapore/topics/Foreign-Trade/Import/Food-imports>

Statista: Distribution of the workforce across economic sectors in China  
<https://www.statista.com/statistics/270327/distribution-of-the-workforce-across-economic-sectors-in-china/>

Statista: Number of the farms in the US since 2000  
<https://www.statista.com/statistics/196103/number-of-farms-in-the-us-since-2000/>

<https://nymag.com/strategist/article/best-indoor-garden-kits.html> (ref: solution 5--examples of how planting kits ensure safe and healthy environments for the plants)

<https://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/2048-7010-2-8> (solution 5--benefits of home gardens)

Parlia: GMOs can lower expenses of farmers and lower price of food?  
<https://www.parlia.com/a/gmos-lower-expenses-farmers-lower-price-food#:~:text=3>

Bio.org: How GMOs can help us feed our growing population

<https://www.bio.org/blogs/how-gmos-can-help-us-feed-our-growing-population> (solution 3)

Food insight: One of our food systems helping hand

<https://foodinsight.org/one-of-our-food-systems-helping-hands-gmos/#:~:text=GMO%20crops%20have%20significantly%20increased,more%20food%20with%20less%20inputs.&text=Genetic%20characteristics%20in%20fruits%20and,help%20farmers%20use%20less%20pesticides>.

The Straits Times: High Tech Farms in Singapore

<https://www.straitstimes.com/singapore/environment/more-than-just-produce-high-tech-farms-in-singapore-look-to-export-their>

Agriculture Technology:

<https://nifa.usda.gov/topic/agriculture-technology>

What are the benefits of using technology in agriculture?

<https://advantech.co.ke/2018/09/11/what-are-benefits-of-using-technology-in-agriculture/>

Precision Farming Increases Crop Yields

<https://www.scientificamerican.com/article/precision-farming/#>