

# **Company Supply Chain Strategy Report: Strong Roots**

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**Programme Name and Code: Bachelor of Business Studies – BSI4**

**Module Name and Code: Supply Chain Management – MNA1094**

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# **Company Supply Chain Strategy Report: Strong Roots**

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## **Executive Summary**

Strong Roots, an Irish plant-based frozen food company known for its healthy and sustainable frozen foods, has expanded into new markets across Ireland, UK, Europe, Asia and the US. Despite gaining a solid foothold in the global frozen food industry, it continues to face challenges that disrupt its supply chain. This essay will focus on the impact of climate change on Strong Roots' supply chain, identifying the current supply chain issues the company is facing. I will propose strategies through conducting researches, to help mitigate the climate-related challenges and outline an implementation timeline for the first year and a brief overview of implementation for second year. Finally, I will justify the proposed strategies by referencing supply chain theories and providing examples of how other companies have successfully implemented similar approaches.

## **Introduction**

Strong Roots is an Irish SME founded in 2015 which is known for producing plant-based, frozen and nutritious foods such as sweet potatoes fries, spinach bites and cauliflower hash brown. Strong Roots offers a wide range of vegan options (Strong Roots, no date) and centres its focus on producing high quality, healthy frozen foods. Starting off as a small local business, Strong Roots has now expanded its market across many countries in the UK, Europe, Asia and the US (Taylor, 2018). As the company is growing both domestically and internationally, it must adapt its ingredients and sourcing practices to align with local food regulations and consumer preferences. Like the broader frozen food industry, Strong Roots faces challenges in logistics, material sourcing, and maintaining its sustainability goals. However, following its acquisition by McCain, the company may now have increased resources and capital to address these challenges more effectively.

## **Risk Assessment – Climate Change-Centred Supply Chain Challenges**

### Unstable Agricultural Production

Strong Roots emphasises complete transparency of its ingredients in the nutrition information provided to the customers (Strong Roots, no date). It is apparent that the company do not use any GMO (Genetically Modified Organism) as it serves its primary purpose of providing a healthier alternative to burgers, fried dishes and other frozen foods (Instacart, no date). Most of the vegetables and ingredients used by Strong Roots are sourced directly from farmers across different countries near their manufacturers. While this approach ensures the freshness and proximity of the ingredients, it poses the supply chain challenge due to unpredictable agricultural production. Extreme weather conditions such as storms, floods and droughts can interrupt crop growth and cause unexpected shortages, affecting ingredient availability (Prasad and Chakravorty, 2015).

## Logistical Disruptions

Refrigerated foods are typically transported by sea and road to accommodate the low temperature needed to prevent the spoilage of the foods. Therefore, Strong Roots mainly relies on sea and road freights to deliver its raw materials and inventory (Global Research Consulting, 2023). For instances, the extreme lowering of water levels of some European rivers in summer 2022 (Limb, 2022) have hugely restricted the river freight capacity. This also led to an increased charge on road freights as the alternative transport option. Other conditions like extreme heatwaves can pose challenges of delaying the rail speed (Stugys, 2023) due to sun kink and raise issues of road cracking and other damage which eventually leads to an operational disruption of road freights (Stugys, 2023) which is one of the main modes of transport Strong Roots relies on. This disruption of supply chain logistics can ultimately lead to a higher cost of transportation affecting the efficiency and timeliness of inventory restocking.

## Increase of Carbon Footprint

One of the main commitments of Strong Roots is to reduce carbon footprint (Strong Roots, no date). In its partnership with McCain in 2021, it can be seen that Strong Roots aligns with McCain's commitment to sustainable practice, includes the implementing of generative agriculture (O'Sullivan, 2024). This has undoubtedly tackled a part of their sustainable goals. However, Strong Roots still faces greenhouse gas emissions challenge, mainly due to the heavy reliance on sea and road freights. As refrigerated truck are required to transport temperature-sensitive materials like vegetables (DHL Freight Connections, no date), it consumes more fuels than the standard trucks due to their cooling systems.

## **Proposed Strategic Plan to Tackle Climate Change Impact on Strong Roots**

### 1. Investment of Hydroponics

To respond to the unstable agricultural production caused by extreme weather conditions, Strong Roots could invest into Hydroponics to ensure the stable sourcing of raw materials (i.e. vegetables, etc). Hydroponics is the growing of plants using a "water-based nutrient solution" instead of soil (USDA, no date). With indoor hydroponics, the risk of disrupted crop production can be hugely reduced by preventing land degradation (eden green technologies, no date) and other damages and delays caused by extreme weather conditions (Rajendran *et al.*, 2024). Hydroponics crops potentially reduce the level of contamination risk compared to soil-based farming which provides a more safe and healthy consumption (Rajendran *et al.*, 2024) which allows the company to continue to strive its goal of providing healthy foods. While high capital is required to develop Strong Roots' own Hydroponics system, Strong Roots could leverage its acquisition by McCain Food company to explore partnerships with Hydroponic companies. Strong Roots could establish a long-term contract,

securing sustainable facilities through an external partner without the immediate capital outlay of building its own system.

## 2. Investment of Vertical Farming

Vertical farming is the method of growing crops in vertically and horizontally stacked layers (eden green technologies, no date). In terms of addressing the climate change challenges Vertical Farming is conducted indoors and does not require soils or natural sunlight, hence it is not affected by weather conditions (Kalantari *et al.*, 2017). Vertical Farming can also be an advantage towards countries with urban heat challenges (Kalantari *et al.*, 2017) like the US, due to its nature of taking place indoor with artificial light source and soilless process. In terms of nutrition, produce from vertical farming does not contain any herbicides, pesticides, or artificial preservatives (Kalantari *et al.*, 2017), aligning with the company goal of providing nutritious and healthy food options. Strong Roots can consider finding Vertical Farms in countries like the US, where such facilities are established, and develop a reliable supplier relationship to proactively prepared for weather disruptions.

## 3. Supplier and Geographic Diversification

An approach to address the logistical disruption is to diversify the supplier geographically and fostering collaboration across multiple supply chain tiers. As Strong Roots have markets across different continents like the US, Europe, and Asia, the company should consider sourcing some ingredients like vegetables from different regions with less climate impact (Kittipanya-ngam, Shi and Gregory, 2011). This enables Strong Roots to avoid relying on a single source of raw ingredients. For instance, when one supplier experience supply shortages, another supplier from a different region can fulfil the demand. Furthermore, Strong Roots should consider communicating and collaborating with both downstream and upstream logistics vendors. This enables the organisation to know where and how items are sourced, transported and processed, allowing it to take proactive measures to mitigate any potential risk.

## 4. Implementation of Hydrotreated Vegetable Oil (HVO)

While the approach of adopting Hydroponics and Vertical Farming have already reduced carbon emission to some extent, Strong Roots could further reduce its carbon emission by replacing fuels used by agricultural machinery or refrigerated truck, to Hydrotreated Vegetable Oil (HVO). HVO is a low-carbon biofuel which can directly replace the regular diesel and offers a more biodegradable, renewable and sustainable approach in transportation (Smigins *et al.*, 2023). By taking this action, Strong Roots would be able to reduce the greenhouse emission significantly hence further promotes its sustainable reputation.

## Implementation Timeline

The following table is a suggested plan for Strong Roots for the first three years of the initial implementation of the strategies:

Timeline	Goal	Activities
<b>Year 1</b>		
Q1	Supplier and Geographical Diversification	Identify current supplier diversification including countries, regions, size of supplier and size of market associated with the supplier.
		Identify suppliers in regions where unstable or extreme weather condition occurs.
	Research and Feasibility Studies for Hydroponics System	Conduct research of the different hydroponics systems and examine the most suitable system relevant to companies' key ingredient.
		Conduct feasibility studies of integrating hydroponic system into existing traditional farm partners.
	Research of HVO	Research and find HVO suppliers.
Q2 + Q3	Research of New Suppliers	Identify new suppliers in or near the regions confirmed to be having impacts by unstable climate condition.
	Pilot Testing for Hydroponic System	Run a small-scale pilot project for hydroponics systems.
	Testing of HVO and Contract Negotiation	Test HVO in refrigerated trucks in certain selected regions. Negotiate contract agreement details with supplier.
Q4	Contract Negotiation with Diverse Region Suppliers	Active communication with suppliers and build relationship to root for long term partnerships.
	Investment Analysis for Hydroponics	Conduct investment proposal for this project.
	Finalise Contract with HVO suppliers	Finalise contract and secure contract.

## Year 2

In Year 2, the company expect to have successfully secured the contract with HVO suppliers. Strong Roots should continue to maintain stable and constant communication with diverse

region suppliers and should expect to secure contract in the regions that is most likely in need of alternative suppliers. Furthermore, the company should continue to look into the capital and investment side for the hydroponics system.

### **Justification of Proposed Strategy**

Investing in Hydroponics and Vertical Farming as a supply chain strategy aligns with the theory of Supply Chain Agility. Supply Chain Agility refers to the ability of a supply chain to respond quickly towards changes in supply or demand (Gligor *et al.*, 2019). Agility focuses on efficiency and flexibility to changes in the market like consumer fluctuation (Sen, 2023) and the internal company environment, for instances, shortage of raw materials (Sen, 2023) caused by geopolitical threats or climate challenges. For instances, the supermarket chain Whole Foods Market (businesswire, 2023) partners with the vertical farm company Plenty to achieve a more sustainable approach in food (Radosavac, 2022), and also mitigating risk posed by unpredictable weather conditions. Supplier and geographic diversification relates to the Risk Pooling Theory of Supply Chain, meaning that the company distribute risk among several suppliers and geographical areas in order to mitigate the impact supply chain disruptions such as caused by extreme weather conditions (Yang and Schrage, 2009). An example of company is Nestlé which adopted geographical diversification in their sourcing of raw materials like coffee beans in order to mitigate risk of supply shortages caused by climate disruptions (Nestlé, no date). Lastly, the implementation of HVO follows the Sustainable Supply Chain Management (SSCM) framework (ASCM, no date).

### **Conclusion**

In conclusion, Strong Roots' commitment to sustainability has undoubtedly an important factor in motivating it to solve supply chain challenges posed by climate change. With investment of time and capital in climate resilient sourcing, diversifying supplier and using sustainable alternatives, Strong Roots can establish a more adaptive, effective and efficient supply chain. While the performance of the strategies needs to be monitored continuously, by investing into the potential challenge, it allows Strong Roots to mitigate the likelihood of significant losses due to adverse climate conditions. This proactive approach ensures the company remains resilient and prepared for the potential disruptions.

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