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Master Thesis

Farm2Table – 應用垂直水培實現耕作即服務

Farm2Table – Utilization of Vertical Hydroponic Farming

Technology to Achieve Farming-as-a-Service

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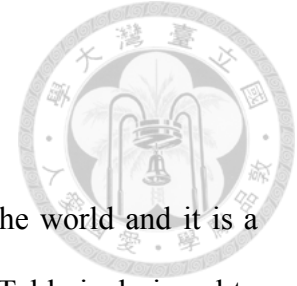
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ABSTRACT



Food safety is becoming a threat that is impacting many parts of the world and it is a publicly recognized threat in many densely populated cities. Farm2Table is designed to alleviate this issue and provide an accessible solution for individuals to secure healthier locally produced vegetables. Farm2Table aims to make use of vertical hydroponic farming technology to supply Hong Kong with High quality, locally produced vegetables at affordable prices. By deploying such farming methodology, it will be able to circumvent the lack of agricultural land in Hong Kong, ensure safe production of vegetables, and allow access to locally grown vegetables. Farm2Table will adopt a niche market strategy to target its client base. Farm2Table will also adopt a Farming-as-a-Service (FaaS) where, instead of conventional vegetable product supply, Farm2Table will provide tailored private farming services. This study evaluates the idea and logic behind the development of Farm2Table and deploys strategies for business growth by referencing numerous well-known business development and management strategies and principles.

TABLE OF CONTENT

1. Introduction.....	1
2. Market Assessment.....	3
3. Competitiveness Analysis.....	8
4. Business Model.....	12
5. Marketing Strategy.....	19
6. Financial Model.....	22
6.1 Revenue Model.....	22
6.2 Initial Capital Expenditure.....	23
6.3 Initial Working Capital.....	23
6.4 Revenue Projection.....	23
6.5 Key Financial Figures.....	24
6.6 Detailed Financial Figures.....	25
6.7 Profit and Loss.....	26
6.8 Cashflow.....	28
7. Expansion/Exit Strategy.....	29
8. Intellectual Property Matters.....	32
9. Risk Management.....	34
9.1 Market Risk.....	34
9.2 Financial Risk.....	35
9.3 Regulatory Risk.....	35
9.4 Operational Risk.....	36
Bibliography & Reference.....	37



List of Tables

Table 1: Hong Kong GDP Trend.....	4
Table 2: Target Market Segmentation	7
Table 3: Market Competitors	8
Table 4: SWOT Analysis.....	11
Table 5: Comparison of Value Propositions	12
Table 6: List of Crop Examples	15
Table 7: Unique Selling Point.....	18





List of Figures

Figure 1: Trend Analysis.....	6
Figure 2: Map of Tsim Sha Tsui.....	14
Figure 3: Business Model Progression	16
Figure 4: Summary of Initial Capital Expenditure	23
Figure 5: Revenue Projection for the First Five Years	24
Figure 6: Key Financial Figures.....	24
Figure 7: Detailed Financial Figures	25
Figure 8: Profit and Loss.....	26
Figure 9: Detail to Electricity Consumption and Cost.....	27
Figure 10: Detail to Operation Salaries	27
Figure 11: Detail to Marketing Salaries.....	27
Figure 12: Cashflow Projection.....	28
Figure 13: Map of Hong Kong.....	29
Figure 14: Pictures of Packaged Salad, Raw Juices, Vending Machine Stocked with Healthy Food	30
Figure 15: Home Growing Hydroponic Kit.....	30
Figure 16: Example of App.....	31
Figure 17: Night Shot of Hong Kong	31



1. INTRODUCTION

Farm2Table aims to utilize vertical hydroponic farming to supply Hong Kong with high quality, locally produced vegetables at affordable prices and bring forth a healthy and sustainable living culture.

By employing this farming methodology, it will be able to circumvent the lack of agricultural land in Hong Kong, ensure the safe production of the vegetables, and allow access to locally grown vegetables at affordable prices for Hong Kong citizens.

It will leverage on existing technology acquired through our partnership with a European smart farming firm that is well-known in this industry. Moreover, it has aims to extend its reach to its customers and seek to be in the neighbourhood of its customers so that it is considered to be a part of the community.

Food safety is only the basic. Through our “open-door” policy, we make our production processes fully transparent and interactive in order to put to rest any doubts the customer may have. We guarantee what you see is what you eat. Quality and convenience shall no longer be a trade-off. We aim to make the quality vegetables available and affordable.

Hydroponic vertical farming itself is already highly resources efficient; but we strive for more. Our operation design will be focusing on minimizing carbon footprints to achieve lowest possible operational carbon emission.

The steps in which we intend to realize our objectives and introduce ourselves to the Hong Kong market is outlined in this business plan.





2. MARKET ASSESSMENT

Hong Kong is one of the most densely populated places in the world and Farm2Table believes that it is the ideal location for the birthplace of its first Farm2Table concept. Hong Kong is regarded as a metropolitan area and special administrative region of the People's Republic of China on the eastern Pearl River Delta of the South China Sea. It has over 7.5 million people of various nationalities. The territory has become one of the world's most significant financial centres and commercial ports. It is currently ranked number 3 in the world in terms of its population density with 6,659 people per square kilometre of land area.

Purchasing power parity ("PPP") is a measurement of prices in different countries that uses the prices of specific goods to compare the absolute purchasing power of the countries' currencies. It is widely used when comparing the Gross Domestic Product ("GDP") of different countries. With this in mind, Hong Kong holds the highest GDP per capita PPP at US \$64,928 in 2019 for Asian countries and when ranked in the world it is placed number ten. This translates to the highest GDP per capital of PPP in Asia. In addition, Hong Kong displays traits of high double-income household facilities and more importantly a positive GDP per capital trend.



	2018	2019	Growth 2019 vs 2018
GDP	US\$ 362.7 billion	US\$ 372.99 billion	+ 2.8%
GDP PER CAPITA	US\$ 48,675	US\$ 49,334	+ 1.3%

Table 1: Hong Kong GDP Trend

The tourism industry has been an important part of the economy of Hong Kong since it shifted to a service sector model in the late 1980s and early 90s. Tourism, along with international trade and financial services are the three main sources of income for Hong Kong. Hong Kong is ranked number thirteenth in the world for the number of visitors it receives on an annual basis, 59.39 million visitors. It is ranked among cities such as London, Singapore, Bangkok, Paris, Macau, Dubai, Shenzhen, New York City and Istanbul. When ranked by the category of international tourists' receipts, the amount of money spent by international tourists on an annual basis, Hong Kong has consistently ranked in the top 10 at the tune of US\$36.2 billion in 2019.

The impressive statistics of its earning power of its residents as well as the revenue generated by its tourism industry has led to immense growth for its food service sector which is valued at HK\$ 104,357 Million with a year on year growth of approximately 3.9%. Both its resident and tourists seek for culinary adventures and unique dining



experiences and this has led Hong Kong to become the second Asian country to host the greatest number of Michelin star restaurants.

Farm2Table finds Hong Kong's vegetable and produce market to be suitable for the implementation of its business model. For its fresh vegetable supply, Hong Kong has 98% of its vegetable produced imported whilst only 2% of it is produced locally. Its main source of vegetable suppliers are Mainland China (77%), United States of America (7%), and Australia (3%). For the year of 2019, the total vegetable market size is US \$420 Million. Farm2Table is positioned to provide an alternative solution to Hong Kong's imported fresh vegetables and as such the total accessible market size would be US\$419 Million due to 98% of Hong Kong's vegetable produce being imported.

A market trend analysis is performed against the external environment. It is important to acknowledge that the industry is ever-changing and Farm2Table will continue to stay ahead of its competitors by keeping current with its analysis. The purpose of the analysis is to recognise any consistent trends or results that Farm2Table has implemented to map its business strategy. The analysis below lists out the four major drivers which Farm2Table believes to be most relevant and they are as follows. Technology, specifically the technology concerning vertical hydroponic farming and the value that it represents. Demographic, specifically the demographic of Hong Kong where Farm2Table is planning for its initial investment. Specific International Events, specifically, triggers that are driving the reform on both the domestic and international level. Legal and political



condition, specifically, whether if local rules and regulations would be supportive of Farm2Table’s initiatives.

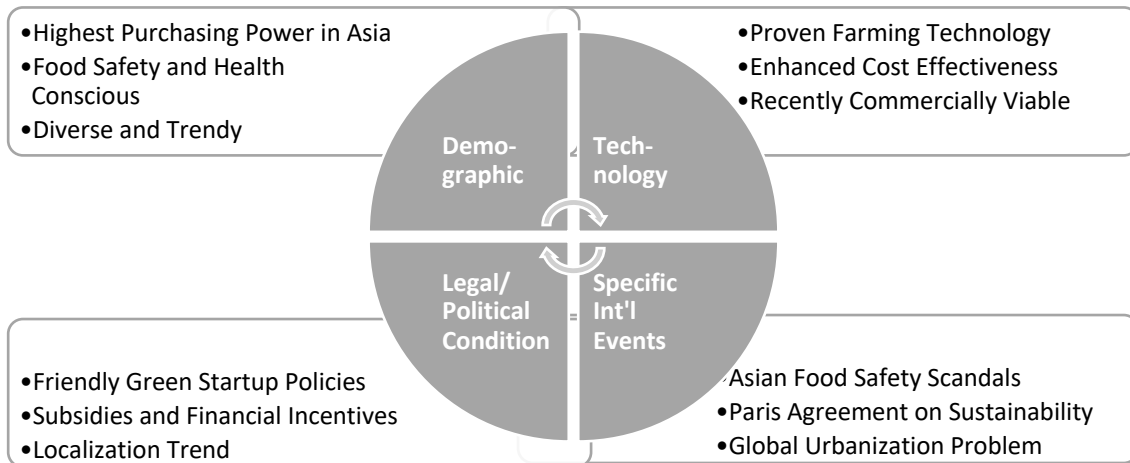
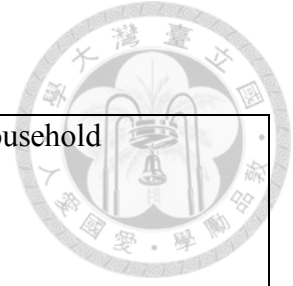


Figure 1: Trend Analysis

The target market and the addressable market size is too large for the likes of Farm2Table. As such, it will aim to divide the market into smaller addressable markets by ways of market segmentation. The result would be dividing a large target market into distinct groups of consumers who have similar characteristics, needs or behaviours. Phase 1 of the below table would be Farm2Table’s initial business model and the details to the financial model will be discussed in the subsequent sections. Phase 2 and phase 3 of the below table would be part of Farm2Table’s future expansion plan.

	PHASE 1	PHASE 2	PHASE 3
Model	B2B	B2B + B2C	B2C



Target Customer	High End Restaurant/Caterers/ Private Kitchens	High End Housing Estates High Traffic MTR stations	Household
Description	Fine Dining Restaurants With Average Spending > HK\$200- 400 per person Has high demand for food safety, quality, and unique crops.	Residents of high-end estates Mid-High-Income Working Professionals in Central Business Districts	Upper Class Family with Spacious Living Conditions
Product (revenue model)	Farming and Delivery Services	Packaged Salad, Bottled Raw Juice	Sale of Home Growing Appliance Provision of Seed & Nutrient Pack After Sales Support
End User Persona	Fine / Boutique Restaurants Owners and Chefs	Mature, Health Conscious, Individuals	Semi-retired, senior, wealthy individuals Homemaker Farming Hobbyists

Table 2: Target Market Segmentation



3. COMPETITIVENESS ANALYSIS

Although it is a trend in European and American market, hydroponic farming is not mainstream in Hong Kong yet. From the competitive analysis, Farm2Table has identified the few local businesses who have utilized hydroponic farming or similar farming techniques in its perspective business:

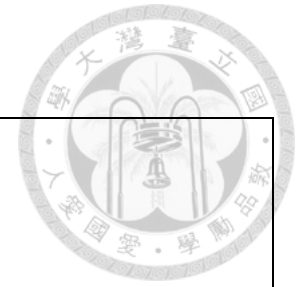
COMPETITOR	DESCRIPTION
Farm Direct	Farm Direct produces its vegetables in its own farming facility and distribute it to consumers through its own retail stores and through e-commerce with delivery option.
Fresh & Green	Fresh & Green is a restaurant & farm concept where the vegetables for the restaurant are produced on-site and serves only its restaurant only.
HK Mekon Farm	HK Mekon Farm is an agent of MekonTek USA (supplier of hydroponic equipment). Its vegetables are produced in its own farm facility and sold directly to retailers at wholesale or via supermarkets.
Evergreens Republic	Evergreens Republic’s growing system uses the aquaponic technique. This means the nutrients for the vegetables are the biological waste from the fish living in the same growing system. It sells its products directly to individual consumers through e-commerce and deliver directly.

Table 3: Market Competitors

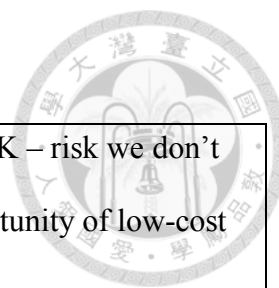


The following table is a SWOT analysis for Farm2Table to determine the strategic fit between the company's internal, distinctive capabilities and external possibilities:

Strengths	Weaknesses
<ul style="list-style-type: none"> • Technical know-how partner • Leader with experience running own company • Pseudo-organic product: pesticides free • No seasonal limitation • Local production (market customisation) • Freshness (minimal lead time) • Environmentally friendly (minimal resources used) • High production yield under controlled environment • Low operation and maintenance cost • Semi-automated process • Attractive start-up team to partner with (motivated international & 	<ul style="list-style-type: none"> • No in-house technical expert • Do not own the technical know-how • No farming experiences • Lack of strong financial support • Limited track record • Uncertain market reaction • Long payback period • Large initial investment • Narrow spectrum of available species (more R&D require for localization) • High product cost, limiting customer segments



<p>local team members with rich skill set)</p>	
<p>Opportunities</p>	<p>Threats</p>
<ul style="list-style-type: none"> • Large potential market, if product cost can be controlled • Certifications and standardization of vegetables • Creating vegan trend, possibility to focus on trendy greens for yogis, health conscious people. • Social enhancement on food safety awareness • Potential risk of import vegetables • Traceability of vegetable supply • Re-habitation of existing abandoned structure & local farming industry 	<ul style="list-style-type: none"> • Overseas competitors and price war with imported product • Government regulations (bureaucratic / lack of support) • Public acceptance • Variation in taste or flavour • Labelled as “overpriced product” • Joint venture problems (disagreement with financial/technical partner) • Competition of other start-ups looking for government support.



<ul style="list-style-type: none"> • Possible help from HK Government • Growth of European expat community in Hong Kong, especially of French citizens and supplying fresh herbs/veggies they cannot buy in HK • Combination of farming and dining experience 	<ul style="list-style-type: none"> • High rent in HK – risk we don't find real opportunity of low-cost facility • Expansive city: high utility bills, transport charges etc • Issues with product, i.e. food poisoning, insects.
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Table 4: SWOT Analysis

Furthermore, Farm2Table has discovered little differentiation among our competitors' products and all of the competitors are product oriented, selling the most popular products through retail, own restaurant or online. On the other hand, Farm2Table's "Farming-as-a-Service" (FaaS) business model is a service-oriented solution catering to restaurants, with demand for high value leafy greens, herbs and rare crops. The difference in Farm2Table's business approach creates a unique value proposition for the Hong Kong market shown in the below comparison table:

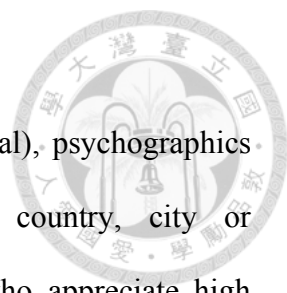


KEY COMPETITIVE CRITERIA	Farm2Table	FARM DIRECT	FRESH & GREEN	HK MEKON FARM	EVERGREEN REPUBLIC
Product Diversity	High (>150)	Low (Lettuces only)	Low	Medium	Middle (>30)
Farm To Table Time	Yes (<12 hours)	No commitment	No commitment	No commitment	No commitment
Customer Segment (B2B)	High end restaurant	N/A B2C only	N/A B2C only	N/A B2C only	N/A B2C only
Business Model	Services oriented	Product oriented	Product oriented	Product oriented	Product oriented
Food Contamination Risk	Low (confined system)	Med - Hi (Open Green house)			High (aquaponics & symbiotic system)
Customization	Yes	No tailoring or customization service			
Customer Service	1-1 private unique service	No (only delivery service with minimum order quantity)			No

Table 5: Comparison of Value Propositions

4. BUSINESS MODEL

To introduce the Farm2Table concept for Hong Kong, the company will be adopting a practical and multi-phased development approach. Farm2Table believes this to be very important because this concept is considered a niche. A niche market is a segment of a larger market that can be defined by its own unique needs, preferences, or identity that makes it different from the market at large. In this scenario, Farm2Table will be defining its niche by price (luxury, moderate, discount), demographics (gender, age, income level,



education level), level of quality (premium, handmade, economical), psychographics (value, interests, attitudes), geographics (resident of certain country, city or neighborhood). Farm2Table will focus on high-end restaurants who appreciate high quality premium products. These restaurants would also have its patrons sharing the same values and the restaurant will leverage off Farm2Table's brand value to gain traction with its diners.

Farm2Table understand that whilst hydroponic technology is experiencing strong growth in numerous parts of the world, however, it is still a novel idea in Hong Kong. As such, it understands that it must place importance in its marketing efforts and brand building efforts in order to leave an impression on the Hong Kong public. Further details are described in section 5, "Marketing Strategy".

Farm2Table's vision is to establish a Farm2Table network all over the city. It will select viable neighborhoods with the right infrastructure investment in place as its ideal location of establishment. Gradually from there, Farm2Table will expand into other neighborhoods. The initial market for the first stage of its business is the Tsim Sha Tsui district and its target customer segment will be the high-end restaurants (500+ located in the 1.02 km² TST area).

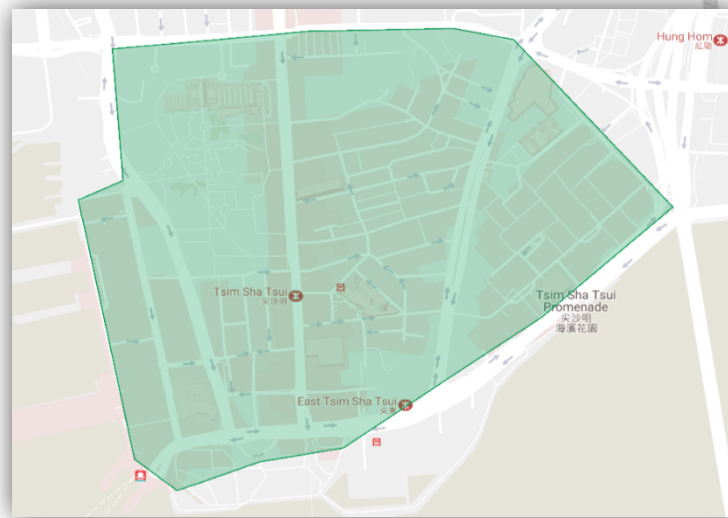


Figure 2: Map of Tsim Sha Tsui

Unique and high value crops are its target products for its inception. Naturally, the customer segments who would appreciate our niche offerings will be the chefs and restaurants owners of high-end restaurants. These high value crops are rare in Hong Kong vegetable supply by offering these exotic leafy greens, herbs, and edible flowers without seasonal, climate and geographical limitation thus allowing Farm2Table an excellent opportunity to fully showcase its technology. As an example, Sheep Sorrel is a sour and intriguing herb, very hard to find due to strong seasonal limitation. To apply this ingredient in a dish, chefs usually import from oversea at a high price. Without the Farm2Table solution, signature dishes or menus which require special ingredients with limited availability will not be feasible.

The below table shows a list of crops which would allow Farm2Table's target customer



to understand its unique product offer and the concept of Farming-as-a-Service. The complete Farm2Table catalogue will have more than 150 species of rare vegetables.

CROPS EXAMPLE	LEAD TIME	DESCRIPTION
Papalo	7 weeks	Central Mexican herb, used in sandwiches known as cemitas in central Mexico.
Bronze fennel	4 weeks	At a young age has a sweetness to it. Not rubbery or chewy.
Purple Ruffles Basil	6 weeks	Ruffled and jagged purple leaves, with a strong aroma of anise.
Nepitella flower	6 weeks	Tuscan herb has disappeared from a lot of recipes. Has beautiful tiny pink flowers
Sheep's Sorrel	8 weeks	Sour and intriguing herb, very hard to find
Minutina (Erba Stella)	6 weeks	Italian salad leaf, shaped like grass but succulent and crunchy.
Pluto Basil	6 weeks	small, highly-fragrant leaves, perfect for garnish

Table 6: List of Crop Examples

To better serve its customer segment, Farm2Table has developed a Farming-as-a-Service model (“FaaS”) where, instead of conventional vegetable product supply, Farm2Table will provide tailored private farming services.

The following description outlines the FaaS model of Farm2Table:

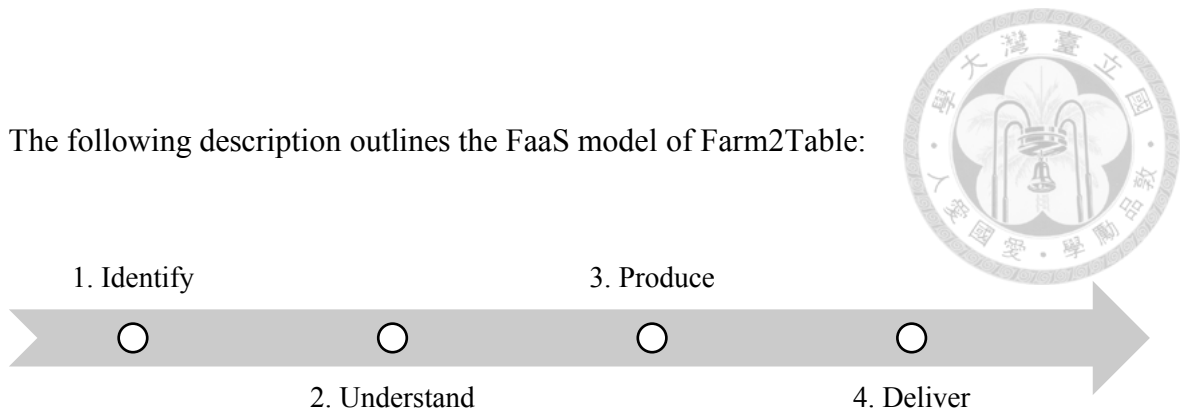


Figure 3: Business Model Progression

(1) Customer Identification

Internal matching of our customers based on their demand will be carried out to ensure both customer and Farm2Table’s core benefit are aligned. Mismatched customer should be minimized to avoid nuisance (e.g. customer targeting for common vegetables).

(2) “Need-Finding” Process

To understand the exact preference of the chefs, not in term of the crops to be procure but also their uses. Furthermore, as crops are highly perishable commodity, freshness and nutrient quickly fade away as soon as the vegetables are harvested. Hence the volume and time of daily delivery preferred by the customer needs to be identified to maintain freshness and minimize holding cost and food wastage.



(3) Production Schedule

With the desired crops identified, the daily supply will be subject to a detail execute production schedule. This plan takes the following criteria into consideration:

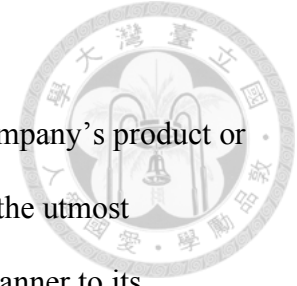
- Production lead-time (crops grow lead-time & anticipated harvest time)
- Delivery schedule (if delivery is not advisable due to constraints such as space, equipment limitation)
- Consumption volume

(4) Fast and Fresh Delivery

With factory located in nearby Hung Hom district and equipped with our fully controlled and modular farming system, Farm2Table is only 15 minutes away from our target customers in TST. Our agile logistic plan minimizes farm-to-table time and maximizes freshness.

(5) “Customization of product” (optional)

For restaurant with unique needs we not only are able to customize the taste of our products to the special preference but also provide R&D for new species not in our product portfolio to really help our customers create their dream menu.



A unique selling point (“USP”) is the essence of what makes any company’s product or service better than its competitors. Farm2Table believes that it is of the utmost importance that its USP are communicated in a clear and efficient manner to its potential customer. A summary of USP on both FaaS business model and Hydroponic farming technology are listed below:

PAIN POINT	USP FROM Farm2Table BUSINESS MODEL	USP FROM HYDROPONIC TECHNOLOGY
Cost Efficiency	Allow crop production with lower cost compare to import	Little limitation, leafy green crops can be produced at standard cost
Food Safety	Real-time monitoring with inviting open-door policy enhances traceability and transparency	Isolated system, no pest hence no pesticide
Limited Choice	Tailored taste and extensive product portfolio (more than 150 species)	No seasonal, climate & geographical limitation
Food Quality (Freshness)	Extra freshness is achieved with nearby production location	Standardize production procedure with R&D backup

Table 7: Unique Selling Point



5. MARKETING STRATEGY

For the first phase of Farm2Table, the management team will be employing a traditional “hands-on” approach for customer acquisition. As such, all of Farm2Table’s customer engagement media will be designed to create opportunities for its In-house Farmers to get to know its potential customers face to face and really give off the tailored-made, private farm experience.

The company’s website will serve as the customer’s “first impression” of Farm2Table. It is important that our potential customers can learn about the company’s brand story, understand the workings of Farm2Table, and view the catalog of products in which the company can grow as well as the value that the company aims to deliver. For existing customers, the website will allow for its representative to log into its private page to monitor the status of its current farm, inventory, and billing. For potential customers, the primary goal of this website is to direct them to contact Farm2Table’s “Personal Farmers” to start the consultation process.

The consultation process will be a face to face introduction and need-finding chat with the company’s customer which begins with a visit to the customer’s restaurant where Farm2Table employee can bring in samples of its products for demonstration purposes and in return to invite its potential customers to visit the company’s farm to witness its operation in action. As part of the potential customers’ visit, the company will look to




incorporate an educational session on its technology as well as important knowledge such as food safety, quality, and benefits will be shared.

To generate attention, the company will leverage off current events in the news or social media to capitalize on opportunities to spread the word on Farm2Table based on a “zero cost” method. An example of this method may be contacting media outlets in the wake of a poisonous food scandal and letting them know about the existence of Farm2Table and present them the opportunity to write a balancing or related piece. Farm2Table would also aim to generate publicity by partnering up with celebrity chef or specific restaurants as its pilot customers to trial its operations and to help overcome the “early adopter fear” for other perspective customers.

For restaurants who are willing to let Farm2Table install demonstration units in its space, The company will offer discount on their subscription. This is similar to beer-selling companies sponsoring restaurants with taps or beverage company sponsoring restaurants with beverage dispensing machine. Farm2Table will design the units in mind so that it can be integrated as part of the customers’ existing furniture so that it could function as a demonstration display for diners visiting the restaurant (e.g. reception’s desk, restaurant bar) to show off its farming technology as well as to act as an image booster for Farm2Table’s client.

For customers who wants to advertise its Farm2Table private farm, the compan can provide a time-lapsed “How It’s Made” video for the restaurant with its name and the



company's branding which they can display in their restaurant as advertisement. The company will also supply stickers for partnering restaurants to display on its front window and menu. The stickers would read that this restaurants vegetable produce are certified safe and produced by Farm2Table. Different categories of certification can be done: restaurants with some of its produce supplied by Farm2Table can be gold level, restaurant with most of its produce supplied by Farm2Table can be platinum, and restaurants with 100% of its produce supplied by Farm2Table can be diamond for differentiation and branding.

All of the above items are specific to phase 1 of Farm2Table. As the company progress through the various phases of its business and target different customer segments, the company will have to develop different approaches to support those phases.



6. FINANCIAL MODEL

6.1 REVENUE MODEL

Farm2Table generates revenue through the provision of farming services to its customers, high-end restaurants. Farm2Table will assist its customer in selecting the produce to be planted according to its needs, ensuring that each customer extracts the most value from Farm2Table's service. Farm2Table will charge its customer a fee of HK\$5,000 per month for each stack used in its plantation unit, inclusive of seeding, nutrients and delivery.

To achieve this, Farm2Table will need HK\$5 million dollar as initial capital. The initial capital of HK\$2.5 million would come from its investors and the remaining HK\$2.5 million will be contributed by the founding member of the company.



6.2 INITIAL CAPITAL EXPENDITURE

Our initial capital expenditure will be approximately \$4.3 million, the major items include:

	HK\$
30 plantation units	3,000,000
Renovation	1,000,000
Vehicle: 3 electric motor cycle	300,000
Total	<u>4,300,000</u>

Figure 4: Summary of Initial Capital Expenditure

6.3 INITIAL WORKING CAPITAL

Remaining \$700,000 will be used as working capital for the first year. Farm2Table will be self-sufficient in generating working capital by the end of the first year.

6.4 REVENUE PROJECTION

Each Vegetable Production Unit (VPU) are made up of 6 stacks and each stack will be rented out at HK\$5,000 per month, which equates to HK\$10.8 million per annum. Due to limitation at the start of business, including the number of customers and plantation lead



time, we estimated that the utilisation rate will be at 55% and 68% for year 1 and year 2.

Utilization rate will increase gradually each year after.

Income projection	Year 1	Year 2	Year 3	Year 4	Year 5
VPU rental at 100% capacity	10,800,000	10,800,000	10,800,000	10,800,000	10,800,000
Assuming not at full capacity	55%	68%	79%	88%	95%
Estimated income after discount	5,940,000	7,344,000	8,532,000	9,504,000	10,260,000
Increase per year		13%	11%	9%	7%

Figure 5: Revenue Projection for the First Five Years

6.5 KEY FINANCIAL FIGURES

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
P&L						
Total Revenues	-	5,940,000	7,344,000	8,532,000	9,504,000	10,260,000
Operating Income (EBITDA)	-	628,075	1,573,820	2,191,583	2,764,598	3,153,663
EBT	-	268,075	1,213,820	1,831,583	2,404,598	2,793,663
Net Income	-	223,843	1,013,539	1,529,372	2,007,839	2,332,708
Profit margin		3.8%	13.8%	17.9%	21.1%	22.7%
Cash-Flows						
NI	-	223,843	1,013,539	1,529,372	2,007,839	2,332,708
+ Depreciations	-	360,000	360,000	360,000	360,000	360,000
- Net Investment in Fixed Capital	- 4,300,000	-	-	-	-	-
FCFF	- 4,300,000	583,843	1,373,539	1,889,372	2,367,839	2,692,708
Cummulative FCFF	- 4,300,000	- 3,716,157	- 2,342,618	- 453,246	1,914,593	4,607,302
Corporate Tax	16.5%					
WACC	8.7%					
NPV	2,341,031					
Required rate of return	9.4%					
NPV	2,195,669					
IRR	23.8%					
Payback period	3.81					

Figure 6: Key Financial Figures

Notes:

-All Figures in HKD.



6.6 DETAILED FINANCIAL FIGURES

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
BS						
Assets	-	5,223,843	6,237,382	7,766,754	9,774,593	12,107,302
Liabilities	-	-	-	-	-	-
Net Worth		5,223,843	6,237,382	7,766,754	9,774,593	12,107,302
P&L						
Total Revenues	-	5,940,000	7,344,000	8,532,000	9,504,000	10,260,000
COGS	-	594,000	734,400	853,200	950,400	1,026,000
Marketing Expenses	-	240,000	240,000	240,000	240,000	240,000
Salaries	-	2,930,400	3,076,920	3,376,296	3,545,111	3,722,366
SG&A	-	1,647,525	1,818,860	1,970,921	2,103,891	2,217,971
Operating Income (EBITDA)	-	628,075	1,573,820	2,191,583	2,764,598	3,153,663
Depreciation Expenses	-	360,000	360,000	360,000	360,000	360,000
EBIT	-	268,075	1,213,820	1,831,583	2,404,598	2,793,663
Interest	-	-	-	-	-	-
EBT	-	268,075	1,213,820	1,831,583	2,404,598	2,793,663
Income Taxes	-	44,232	200,280	302,211	396,759	460,954
Net Income	-	223,843	1,013,539	1,529,372	2,007,839	2,332,708
Profit margin		3.8%	13.8%	17.9%	21.1%	22.7%
Cash-Flows						
NI	-	223,843	1,013,539	1,529,372	2,007,839	2,332,708
+ Depreciations	-	360,000	360,000	360,000	360,000	360,000
- Net Investment in Fixed Capital	- 4,300,000	-	-	-	-	-
FCFF	- 4,300,000	583,843	1,373,539	1,889,372	2,367,839	2,692,708
Cummulative FCFF	- 4,300,000	- 3,716,157	- 2,342,618	- 453,246	1,914,593	4,607,302
Corporate Tax	16.5%					
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NPV	2,341,031					
Required rate of return	9.4%					
NPV	2,195,669					
IRR	23.8%					
Payback period*	3.81					

Figure 7: Detailed Financial Figures

Notes:

-All Figures in HKD.



6.7 PROFIT AND LOSS

Far2Table Financial Projection - Profit and Loss						
	Year 1	Year 2	Year 3	Year 4	Year 5	
Income	5,940,000	7,344,000	8,532,000	9,504,000	10,260,000	
Cost of seeds and formulation	- 594,000	- 734,400	- 853,200	- 950,400	- 1,026,000	
Operating cost						
- Rental	- 360,000	- 388,800	- 419,904	- 453,496	- 489,776	
- Electricity	- 213,525	- 215,660	- 217,817	- 219,995	- 222,195	
- Salary (Operation and Logistic)	- 2,402,400	- 2,522,520	- 2,794,176	- 2,933,885	- 3,080,579	
- Marketing / Advertisement	- 240,000	- 240,000	- 240,000	- 240,000	- 240,000	
- Salary (Sales)	- 528,000	- 554,400	- 582,120	- 611,226	- 641,787	
- Other office expenses	- 360,000	- 360,000	- 360,000	- 360,000	- 360,000	
- Vehicle maintenance expense	- 120,000	- 120,000	- 120,000	- 120,000	- 120,000	
- Royalty or licencing fee	- 594,000	- 734,400	- 853,200	- 950,400	- 1,026,000	
Other income (if any)	100,000	100,000	100,000	100,000	100,000	
EBITDA	628,075	1,573,820	2,191,583	2,764,598	3,153,663	
Asset depreciation	- 360,000	- 360,000	- 360,000	- 360,000	- 360,000	
Interest expenses/income	-	-	-	-	-	
EBIT	268,075	1,213,820	1,831,583	2,404,598	2,793,663	
Income tax	- 44,232	- 200,280	- 302,211	- 396,759	- 460,954	
Net Profit	223,843	1,013,539	1,529,372	2,007,839	2,332,708	
	3.8%	13.8%	17.9%	21.1%	22.7%	

Figure 8: Profit and Loss

Notes:

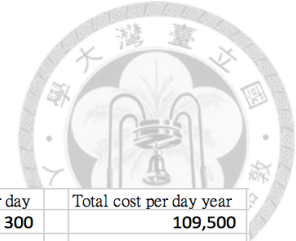
-All figures in HKD.

-Income: See Page 13, Revenue Projection.

-Cost of seeds and formulation: It is directly proportional to income, at approximately 10% of income.

-Rental: Monthly rental cost for 200 sqm and assuming 8% increase each year.

-Electricity: See below table, assuming 1% increase each year.



Air conditioning unit about \$10 for 8 hrs or \$30 per day.		Unit	cost per unit	Total cost per day	Total cost per day year
1	Assume 10 air conditioning unit	10	x 30	= 300	109,500
Assume VPU is simimilar to refrigerator consumption about \$1.5 for 24 hrs					
2	Assume 30 VPU	30	x 1.5	= 45	16,425
Lamp (Tungsten) 100 W \$0.10 for 1 hr					
3	Assume 100 lamp	100	x 2.4	= 240	87,600
				585	213,525

Figure 9: Detail to Electricity Consumption and Cost

-Salary: See below table, assuming average salary + 10% overhead per month for first year. Assumes 5% increment each year.

Salary (Operation and Logistic)								
	Average salary	Staff overhead	Number of staffs	Year 1	Year 2	Year 3	Year 4	Year 5
Manager	30,000	10%	1	396,000	415,800	436,590	458,420	481,340
Engineer	24,000	10%	1	316,800	332,640	349,272	366,736	385,072
Operation (harvest + package)	12,000	10%	9	1,425,600	1,496,880	1,571,724	1,650,310	1,732,826
Logistic (delivery)	10,000	10%	3	264,000	277,200	436,590	458,420	481,340
Total				<u>2,402,400</u>	<u>2,522,520</u>	<u>2,794,176</u>	<u>2,933,885</u>	<u>3,080,579</u>
Assume average salary + 10% overhead per month for first year and 5% increment each year								

Figure 10: Detail to Operation Salaries

-Marketing/Advertisement: Please refer to Section 6, Marketing Strategy.

-Salary(Sales): See below table, assuming average salary +10% overhead per month for first year. Assumes 5% increment each year.

Salary (Sales & Marketing)								
	Average salary	Number of staff	Year 1	Year 2	Year 3	Year 4	Year 5	
Sales representative	20,000	2	528,000	554,400	582,120	611,226	641,787	
Assuming 2 staffs each staff cost on average \$20,000 + 10% overhead per month for first year and 5% increment each year								

Figure 11: Detail to Marketing Salaries

-Royalty or licensing fee: Assumes a fee that is equivalent to 10% of income to be paid to the technical partner.

-Other income: Government subsidies for agricultural business.



-Income Tax: Tax on profit at 16.5%.

6.8 CASHFLOW

<u>Cash flow</u>						
Net profit		223,843	1,013,539	1,529,372	2,007,839	2,332,708
<u>Add/Less</u>						
Asset depreciations		360,000	360,000	360,000	360,000	360,000
Operating cash flow		583,843	1,373,539	1,889,372	2,367,839	2,692,708
Capital Investment (fixed assets)						
1. Infrastructure	- 3,000,000					
2. Renovation	- 1,000,000					
3. Vehicle	- 300,000					
Total initial investment	- 4,300,000					
Net cashflow	- 4,300,000	583,843	1,373,539	1,889,372	2,367,839	2,692,708
Cash balance at beginning		700,000	1,283,843	2,657,382	4,546,754	6,914,593
Cash balance at end		1,283,843	2,657,382	4,546,754	6,914,593	9,607,302

Figure 12: Cashflow Projection

Notes:

-All figures in HKD.

-Asset Depreciations: VPU, vehicles, computers, renovation.

-Infrastructure: Cost per VPU, assume \$100,000 per unit and 10 years to depreciate

-Renovation: One-off renovation cost of \$1,000,000.

-Vehicle: Cost of vehicle, 3 electric motor cycles with customised storage space at \$100,000 each, 5 years to depreciate.



7. EXPANSION/EXIT STRATEGY

After the initial success at its very first Farm2Table in Tsim Sha Tsui area, the management team will be planning to expand to other neighbourhoods in Hong Kong to set the foundation for the future of Farm2Table by establishing a network of Farm2Table in Hong Kong. Farm2Table will be targeting districts where there are high densities of high-end restaurants, namely, Central, Wanchai and Causeway Bay.

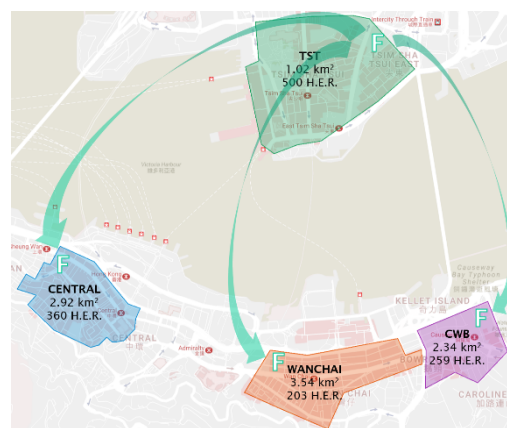


Figure 13: Map of Hong Kong

With Farm2Table set up throughout the key locations in the city, the next phase of expansion would be leveraging off this network to introduce branded food products into its product offering. Farm2Table will then move into sales of packaged foods such as salads and cold pressed juices directly to its customer. Farm2Table will partner with celebrity chefs to design signature packaged salad and cold pressed juices and the plan is to have the products distributed via vending machines positioned at locations with high density pedestrian traffic as well as positioned in high-end residential properties. The vending machines would be stocked and serviced by the nearest Farm2Table location.

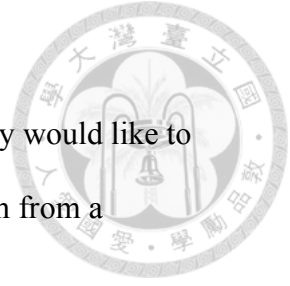


Figure 14: Pictures of Packaged Salad, Raw Juices, Vending Machine Stocked with Healthy Food

Farm2Table's goal is to allow its customer to enjoy growing its own green products from the comfort of its own home. In order to achieve this, Farm2Table will have to scale down its modular growing unit to the size of a home appliance.



Figure 15: Home Growing Hydroponic Kit



With an intuitive app, our customers can select the vegetable that they would like to grow, and we will deliver the seed and nutrient packs directly to them from a Farm2Table nearby.

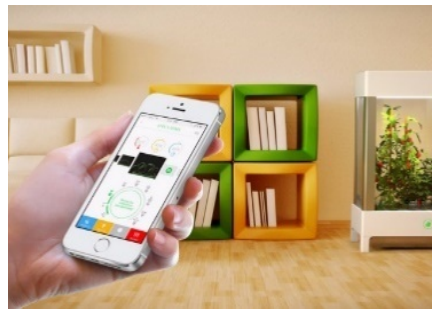


Figure 16: Example of App

Having fully established ourselves in Hong Kong, we will be considering replicating our business models in similar markets around the world. Based on our research, cities with similar characteristics as Hong Kong such as Manhattan and Dubai are immediately available and untapped markets. It is understood that a globalization strategy may be difficult for Farm2Table and as such, it will consider the strategy of selling the business to one of the large indirect competitors in the market that is in the business of organic food groceries. This exit strategy is to seek an investor with solid financial backings and great influential power.



Figure 17: Night Shot of Hong Kong



8. INTELLECTUAL PROPERTY MATTERS

The technology or science for traditional farming is no big secret, general technical requirement is a common sense of primary school topic, but for highly efficient hydroponic farming, the technology behind is intense. Hence, Intellectual Property (IP) Rights of its vertical hydroponic farming system need critical protection from being copied by industry players.

Technical data such as the amount of a spectrum of light required for a certain species of leafy greens is an important asset, research data for optimal water, nutrient, carbon dioxide supply, and the optimal temperature for growth of different crops are all important. Furthermore, the tailored taste preferred by each chef or restaurant based on different cultivation or harvest time are also important and exclusive competitive data, which is essential for its customers to maintain its competitive advantage.

The following commercial data are deemed sensitive information which Farm2Table shall protect through legal means:

- Hydroponic System Specifications (LED lighting system, Temp, CO₂, Humidity or nutrient etc.)
- Hydroponic Production Specifications for existing available species
- Hydroponic Production Specifications for Chef / Restaurant recipe (cultivation technology)

- Hydroponic Production Specifications for Farm2Table's "Signature Salad" Recipe
- Hydroponic Production Specifications for newly research species for Hong Kong





9. RISK MANAGEMENT

Potential business risks have been analysed and the most prominent risk items are categorized into the following risk categories:

9.1 MARKET RISK

Per our interviewed restaurants, its consumption on vegetables is very much related to cost. Hence the low-priced vegetables imported from China remains to be very competitive in the market despite risk on food safety. In terms of the higher quality vegetables, restaurants tend to choose the more commonly available items as its go-to ingredients due to its affordability. Farm2Table will look to position itself to compete with the more expensive and rare vegetable products which are imported instead of competing with the common vegetables readily available in the market. Farm2Table is aware also of the recent entrants of local hydroponic producers with considerably a more matured operation as opposed to Farm2Table, mostly situated in New Territories area. Farm2Table will look to avoid competing head to head with these existing players and we have plans to do so by deploying a business model which would enable Farm2Table to offer a wide range of rare leafy greens, herbs and edible flowers to high-end restaurants. Furthermore, the model is designed to allow its customers to decide what to grow instead of pre-determining fixed product offerings.



9.2 FINANCIAL RISK

Most of Farm2Table's capital will be invested into the vegetable plantation units which are not readily convertible into cash due to its fixed asset nature. Financial liquidity will become a challenge and in mitigating this risk, its management team would have to closely monitor its cashflow and ensure that sufficient cashflow reserves are kept in place. Considerations would also be given to the uncertainties in its business projections and financial forecast as it is sensitive to economic conditions, customer behaviours, market trends and technologies. This will have a direct impact on its forecasted revenue/profit, net present value and payback periods. As such, its management team would have to regularly revisit the assumptions that are made for the financial forecasts and reassess whether if any changes would need to be implemented in order to identify impacts earlier as opposed to later.

9.3 REGULATORY RISK

Any violation of statutory measures will result in termination or suspension of business. Farm2Table will ensure that it stays up to date in monitoring regulatory changes and continuously look to improves on its handling processes so that the risk is minimized. Similarly, any failure in our quality assurance system would be catastrophic to its business. Farm2Table must earn the trust of its customer with a robust quality control and assurance system. This would be achieved by assigning dedicated quality assurance personnel to ensure the operation is in line with its quality process and ensuring conformance to applicable local and international standard. Farm2Table will apply the proven process as



part of the knowledge transfer from its technical partner and look to adhere itself to the more stringent regulations of the European Union.

9.4 OPERATIONAL RISK

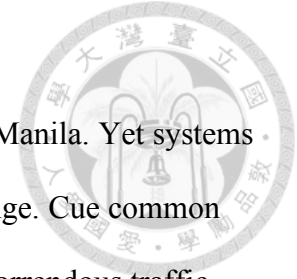
The high rental cost in urban area and high electricity cost from 24-hours operation will together become the major driver in operational cost. Farm2Table will look to mitigate this by actively exploring subsidy programs with the electricity company by ways of establishing CSR partnership programmes. Efforts will be taken to lobby with government agencies for subsidies in the form of energy rebate and tax relieve. Each plants requirement in terms of the necessary length of exposure to daylight on a daily basis varies. Farm2Table will actively manipulate the schedules for each plants growing hours so that the growth period is to take place during off peak hours where the electricity rates are comparatively lower and thereby reducing operational cost.

Availability of talent in the market would be another operational risk. The vertical farming technology to be deployed is relatively new to the Hong Kong market. As such, the training and the subsequent retention of the trained staff would be critical to ensure operational efficiency. Farm2Table has set aside the necessary funds for training and re-training sessions to be conducted by its technical partner and will ensure that the training and re-training sessions are conducted on regular intervals whether the training is done locally or overseas.



BIBLIOGRAPHY & REFERENCE

- Urbanization of Asia Cities
More than 50% of the Asian population will be urban by 2018. UN-Habitat, October 2015 <<http://trendwatching.com/trends/10-innovations-for-asian-citysumers/>>
- Asia is home to 17 megacities, more than any other continent on Earth. UN-Habitat, October 2015 <<http://trendwatching.com/trends/10-innovations-for-asian-citysumers/>>
- Asian urbanization shows no sign of slowing. The implications for you? These growing Asian metropolises present a truckload of innovation opportunities!
<<http://trendwatching.com/trends/10-innovations-for-asian-citysumers/>>
- POST-DEMOGRAPHIC CITYSUMERS: Urban-dwellers share passions, pain points, high expectations and a hunger for new offerings.
<<http://trendwatching.com/trends/post-demographic-imperatives/>>
- Rapid urbanization over the past decade has birthed the thriving economic, social and cultural hubs that are Asian metropolises. And with economic growth came higher spending powers and increased consumer sophistication. The movement of people also resulted in the melting pot of ideas and cultural exchanges so rampant



in many Asian cities, from Singapore to Shanghai, Mumbai to Manila. Yet systems and infrastructure are struggling to keep up with this rapid change. Cue common issues riddling Asian cities: improper housing and sanitation, horrendous traffic, safety and social welfare concerns, pollution, environmental damage, and more. So, welcome to the era of the Asian CITYSUMER – increasingly experienced and sophisticated city-dwelling consumers, navigating urban life and battling various civic and social issues every day. This group is a prime audience for brands and businesses. Serve the unique needs associated with urban living and you'll win much love

<<http://trendwatching.com/trends/10-innovations-for-asian-citysumers/>>

- Cities are one of the central drivers of POST-DEMOGRAPHIC CONSUMERISM, and they are also where this trend finds its purest expression. In large and rapidly growing cities, consumers can pursue the lifestyles they desire: not only are cities more *permissive* of tradition-eschewing pursuits than rural areas, they also provide *access* to a diverse range of products, services and experiences. Meanwhile, greater economic opportunities and higher incomes increase residents' ability to pay for these lifestyles, and a competitive culture around collecting unique experiences enhances the desire for them. The tribes within cities are delightfully diverse, yet there are common pursuits (for convenience, unique experiences, and for holistic self-improvement) and shared problems (congestion, pollution, time-constraints and stress) that can be catered to: by you! <<http://trendwatching.com/trends/post-demographic-imperatives/>>



- “Let me feel confident in the choices I’m making” – “Curated selections” are an effective solution for this job, and Whole Foods’ is already delivering brilliantly in its existing stores, with its 365 Everyday Value house brand (which may be the focus of the new chain, if trademark filings are to be believed). But, again, Whole Foods is not alone here. For example, in February, Target announced that its “Made to Matter – Handpicked by Target” collection of value-priced “high-quality, better-for-you products” will double in size to 31 grocery brands, including 200 new and exclusive products, generating an expected \$1 billion in revenue by year’s end. <<https://hbr.org/2015/05/whole-foods-misguided-play-for-millennials>>

- 74% of Chinese shoppers are likely to consider whether a product is fair trade, environmentally friendly or donates a portion of proceeds to charity when buying, a higher proportion than in Australia or New Zealand.
<<http://trendwatching.com/trends/post-demographic-imperatives/>>

- Factory Fresh - Locally-sourced healthy meals delivered daily to customers' doorsteps. Launched in May 2015, Factory Fresh is a Beijing-based food delivery service that brings set menus to customers’ doorsteps every morning. The nutritionally-balanced meals are cooked to order using locally-sourced, market-fresh ingredients; calorie and nutritional information is available on the brand’s website. Factory Fresh’s set menus are priced at around CNY 360 – 500 (USD 56



– 80) per day.

<<http://trendwatching.com/trends/post-demographic-imperatives/>>

- “Give me convenient access to healthy food” – Both Target and Walmart are aggressively working to satisfy this job by rapidly expanding the number of CityTarget, TargetExpress, and Walmart Express stores. Perhaps the real solution to this job goes beyond simply locating stores closer to city dwellers to actually bringing the store to the consumer. But with \$10 billion in 2014 sales and an annual growth rate of 14% over the last five years, the grocery delivery market is booming. Everyone from Amazon and Google to Instacart (partnered with Whole Foods) and FreshDirect are already jumping into it.

- <<https://hbr.org/2015/05/whole-foods-misguided-play-for-millennials>>

- “Give me good value” + “Enable me to make healthy choices” — Whole Foods is often referred to as “Whole Paycheck” because many perceive its prices to be significantly higher than those of traditional grocers. But the market void created by this perception is quickly being filled by big players like Walmart and Costco (which many believe will be the largest U.S. food retailer in a few years). Walmart last year began selling organic foods from Wild Oats in an attempt to disrupt prices in the market for which Whole Foods is best known.

<<https://hbr.org/2015/05/whole-foods-misguided-play-for-millennials>>

Reference & Sources



- <http://farmdirect.hk/en/news>
- <http://www.interiordesign.net/slideshows/detail/8003-big-ideas-growing-green/22/>
- <http://www.lohasexpohk.com/lohas-u-s-a/?lang=en>
- <http://www.evergreensrepublic.com/>
- <https://www.facebook.com/evergreensrepublic>
- <https://www.greenqueen.com.hk/evergreens-republic-organic-aquaponics-hong-kong/>
- <http://hongkong.coconuts.co/2016/03/30/hong-kongs-greener-future>
- <https://www.instagram.com/p/BHoV-M7hcx/>