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Alternative nutrients – *the foods of tomorrow today*

1. Introduction of the Idea

The idea is to sell people insect and microalgae based food products on e-commerce platform. This idea is based on the growing trend of "Sustainable, Safe and Nutritious Food". The business idea contains two phases: first build an online store focusing on high quality alternative nutrient products, namely insect- and algae-based. The second phase is to start our own product lines after the online store produces positive cash flow and reputation for the company.

Increased awareness of the health and environmental benefits of novel nutrient sources is undoubtedly the main driver that supports the uptake of the trend. Consumers are increasingly concerned with the nutritional properties of their food. This has resulted in the rapid growth of the fitness and health food sector and in increased interest in the benefits of protein-rich "super foods", such as algae and insects. Public and private initiatives are also actively promoting insects and algae production and commercialisation. The results are visible both at an industry level, with the fitness and health food sectors booming, and at the community level, with local educational establishments adopting new nutrient sources as didactic material. (1)

The fact is that by 2050 the world population will reach 9.6 billion people. This growth puts food and feed security under huge stress due to the ensuing increase in animal protein demand. To feed this growing population current food production will need to almost double. The question is how to increase food production in such a scale? Expanding the area devoted to farming is not a viable or sustainable option and the oceans are already overfished. Evermore worsening the situation is the climate change and related water shortages could have profound effects on food production. Within this context, the need for new sources of nutrients becomes evident. (2)

The two most promising options to solve this problem are insects and algae, which show potential as alternatives to animal proteins for human consumption.

Insect consumption, known as entomophagy, entails many nutritional benefits including high protein content, minerals and vitamins. Insects also have roughly twenty times higher food conversion efficiency than traditional meats. Although entomophagy is a new concept in western countries it is estimated that 2 billion people consume insects in developing countries. A report by New Nutrition Business claims that the edible insect food industry alone could become a EUR 320 million business in the US and Europe within the next 10 to 15 years (3)

Algae, which comprise seaweeds and microalgae, are also rich in nutrients. Microalgae-based products for food and feed applications consist of both whole dried biomass (Spirulina and Chlorella) and microalgae components (Astaxanthin, β-carotene, Phycocyanin and the two omega-3 fatty acids EPA and DHA). High-value microalgal products have a very good potential for growth. For instance, the current global market size of natural astaxanthin from Haematococcus for the human consumption is estimated to be about 180 million euros in 2015. This is expected to increase to 630 million euros by 2017 (4)

While the wider picture is looking promising we should take in to account that sustainability and environmental arguments alone are not enough for wider consumer acceptance of our products. These new nutrient sources can only become integral part of our diets if they are made palatable, tasty and appealing for the customers. The largest obstacle for the insect market remains the

disgust-factor as insects are seen as something inherently unsanitary. Changing this perception is a long road but not something impossible. A good example can be found from the USA where lobsters and shrimps were seen as poor man's food but are now treated as delicacies.

2. Business model

The business model is an e-commerce platform which serves customers a variety of third-party producer products in the field of entomophagy and microalgae.

2.1 The customer

The business model is centered around a customer who wants to feel good about him/her self's consummation. Constant discussion about population growth and unsustainable food production methods have created a sizeable group of people who do not want to consume red meat because of the environmental impact. If able to convince this demography that alternative protein sources are far more sustainable and thus favorable we have a sizeable customer base.

I would identify a typical customer in the first phase of our company as an educated urbanite young female adult, who is drawn to exotic cuisines and experiences. Another group of customers would be environmentally orientated adults. In the second phase the customer base would consists of your everyday shopper as insects and algae would gather much more following and begun be used as normal ingredients.

2.2 Value Proposition

The primary value of the business is accessibility. Currently obtaining these products can be problematic and even dangerous for customers as there is no regulation on these products. I suggest providing the customers with only the highest standard of product.

The secondary, but perhaps the more selling value is the novelty of the products. Customers may have heard of and even tasted some of the products but for the enormous majority these alternatives for meat are new and fascinating.

As always with online stores there are additional advantages to customer when comparing to traditional stores, which includes:

- Convenience
- Better prices
- More variety
- Price comparisons
- Discreet purchases are easier
  (5)

2.3 Channels and customer relationships

I will solely focus on social media marketing. Social media platforms allow to improve the international market presence and reach potential clients all over the world. It is possible to perform various business functions through social media, including marketing, market research, and online retailing.
With over 1.73 billion people using social media networks across the world in 2013, the potential value of this trend is huge. As the age category of people using social media is widening, applicability for a much broader product range, and thus a broader range of companies, becomes of interest. Thus it is simple to focus on social media instead of traditional medias. Customer relations are kept through social media also. (6)

2.4 Revenue

In the beginning as it is usual with novel products the early adopters can be presumed to be willing to pay premium prices. Eventually though the prices must fall to mirror the true production costs. The ideal situation will be when the cost per gram will be able to compete with meat products. Current prices are sky high as we can see prices such as 80€/kg for insect based products. The pricing model must be aggressive in order to oust the competition which will surely rise.

2.5 Key activities

The number one issue is to offer the customers what they want. The company must offer a wide range of products from different producers to be convenient for the customer. Currently the customer must order the produce straight from the producer which is not optimal or wanted.

2.6 Key Partners

The business is dependent on two key factors: the e-commerce platform and third-party products. Magento e-commerce solution has been designed to be completely scalable for small and bigger businesses that want to provide their clients a good user experience. Our third-party product partners will include such companies as Eat Grub, Entotech, Necton and Ocean Harvest Technology.

2.7 Cost Structure

Fixed costs:

Web development costs: A custom e-commerce website costs around 5000€ - 15000€. This includes complete shopping cart functionality, blog, social media integration, reviews and ratings features, and full analytics tracking to track visitors and sales. As a rule of thumb, one should always consider something in between the 3% to 10% of the revenue generated by the e-commerce in one year as a cost of keeping it up and running smoothly.

Web hosting costs: A reliable host with high-speed servers cost around 30€/month.

Pay-per-click (PPC) advertising with Google AdWords, cost vary depending on visibility wanted.

Variable costs:

Include raw materials, inventory, production costs, sales commissions and shipping costs. These costs fluctuate in direct relation to sales volume. If sales increase, then variable costs increase. If sales decrease, then variable costs also decrease.

3. Analysis of the business idea

Entomophagy and micro-algaes are hot trends among food scientists and enthusiastics but face significant problems before they can be seen as a regular staple. The uptake of the trend entails numerous social benefits across several interconnected areas, from job creation, economic diversification and gender empowerment, to food security and improved public health. Most importantly, it stands to help reduce greenhouse gas emissions and contribute towards environmental protection. It is important to appreciate the broad relevance and scope of such social benefits. However, several obstacles are faced by companies trying to promote their production and commercialisation. These include cultural barriers affecting customer acceptance and the restrictive EU regulatory environment (1) Even with this complicated background, I am confident that alternative nutrient sources will become a significant player in the food market and as such provide a clear business opportunity. The microalgae products have a much easier time on the market as they are plant based and not as such seen as negative. I shall focus here on the insects as they are the main product.

3.1 Cultural obstacles

The main regions consuming insects are located in Mid - South America, South Africa, Asia, and Oceania. Generally, edible insects are very popular in the tropical countries, but few insects are consumed in the Europe. Entomophagy as such is heavily influenced by cultural practices. In most Western countries, however, people believe insects-eating as primitive behavior which causes feeling of disgust. This feeling forms moral judgment to reject insects as human food. Additionally, certain insects are also transmitters of disease, which gives people another reason to say no. (7) This attitude might be one reason why insect rearing has been neglected in agricultural research in this part of the world. In the Netherlands, entomophagy has been promoted since the late 1990s and today there is a wider acceptance of edible insects among the public. The key to success has been collaboration among the research community, the private sector, government institutions, foundations and non-profit organizations. (8) The disgust factor is a serious issue when promoting entomophagy. Psychology professor Paul Rozin has said: “the last and critical step in promoting insects as food is getting people to eat them”. Rozin lists the following attributes in accepting entomophagy:

• Disgust sensitivity

• Beliefs about the risk of consuming insects

• Beliefs about the benefits of consuming insects

• Desire to have new and stimulating experiences

• Risk tolerance, food neophobia (resistance to try new foods)

• Gender (9)

It appears that people will accept eating insects if the presentation looks and smells familiar and if insects are not served intact (8). Therefore, the promotion of insects cannot focus solely on communicating the functional benefits, but must also pay attention to the products so that they suit the expectations of consumers within their own cultural context. The disgust factor must be addressed in both communication and education to promote entomophagy in Western societies. (7)

3.2 Legal obstacles

Because insects are not perceived as food there is no common legislation in the EU. Currently EU member states are applying their own rules for the commercialization of products intended for human consumption. A search in FAOLEX shows 1166 references to laws regarding insects but no references to the use of insects as food or feed ingredients. These 1166 (searched 5.12.2016) laws are mainly concerning sanitation and pest control in the agricultural sector. Laws and regulations on beekeeping and silkworm-raising are well developed in several countries with significant honey and silk industries. A few countries have legislation that refers to insects in food as impurities and that prescribes maximum permissible levels. The European Commission has not ruled on whether or not insects should be considered Novel Foods as of yet. This leads to:

- A lack of clarity on which insects are to be authorized for the market
- The lack of precise and insect-inclusive legislation, standards, labeling and other regulatory instruments

The current situation is a cycle, as insects are not seen as food there is no industry so there is no legislation, but because of no legislation there cannot be industry.

It must be noted that as there are many obstacles these can be seen as the possibility, as we have a market that does not exist yet but is forecasted as growing in to a huge size. The way I see the situation is that the first actor on the market can take it all. The trick is to know how the legislative process is going to mold and make your moves depending on that. Currently insects are only obtainable from restaurants or straight from the nature as the current legislation does not allow the sale of such products as human food. A good example of the situation are Finnish company EntoCube's products sold in Ruohonjuuri. The company must state the following: "Kotisirkkoja katseltavaksi - saa syödä vasta, kun laki muuttuu!" (10)

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