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Small Giants: Marketing Challenges Behind the Adoptions of Insect-Based Foods

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Introduction

Small Giants (www.eatsmallgiants.com) is an innovative startup company founded in London by two Italian students. Francesco Majno and Edoardo Imparato are two friends, who, in 2015, came up with the original idea to develop a food product based on insects: namely, mini crackers with 15% cricket flour, extra virgin olive oil and wheat flour. Their idea came from a very simple assumption: if 2 billion people in the world already consume insects, why not try to convince the other 5 billion to eat them too? And so began the idea to create and build a company that promotes food products made of insects. According to Francesco Majno, now the Chief Marketing Officer of Small Giants, the real enlightenment came when reading a report from the Food and Agriculture Organization of the United Nations (FAO) about the huge negative environmental impact of the current food industry, and especially of livestock production – and by comparison, the extraordinary food alternative that insects represent. In 2015, Francesco and Edoardo took part in the "Barilla Good4 Startup the Future" contest where they presented their concept for an insect-based food company for the first time. With Barilla being the second-biggest food producer in Italy, the content was a huge opportunity for Francesco and Edoardo to promote their idea. Even though they finished second, their innovative idea received a lot of public attention and approval – not to mention interest from investors. Over the next few years, Small Giants raised over 600,000 euros in funding, primarily from a Seed held on August 03, 2021, that brought $558K (See: https://www.crunchbase.com/organization/small-giants-8104). As of today, Small Giants has two major investors, iN3 Ventures and SocialFare.

The two founders were in a hurry to develop their idea and bring a product to market. However, at that time, the process of obtaining an approval to produce and sell insect-based food products in the European Union was difficult and time-consuming to acquire due to the lack of common legislation among member countries. As a result, Edoardo and Francesco moved to the UK, where it was already possible to sell insect-based products without restrictions. In November 2020, the brand Small Giants was born. Thanks to their initial funding of more than 600,000 euros, they were able to put the first Cracker Bites on the market. After an initial test phase, the cricket crackers ended up on the shelves of 70 outlets of Sainsbury's (the second-largest supermarket chain in the UK) by February 2021. In the meantime, Small Giants used the e-commerce to reach the rest of Europe. In November 2022, Small Giants launched their second product, Crispy Bakes, made with buffalo worm flour.

After the positive experience in the UK, Francesco and Edoardo decided to move back to Italy in February 2023. This decision was the result of two important events. First, Brexit made the export of Small Giants' products to other EU countries more difficult and expensive. Second, the recently approved EU regulations on insects for human consumption made the production and selling of insect food products in the EU more affordable and accessible. Specifically, in March 2023, the European Commission and the European Food Safety Authority authorized the larval form of Alphitobius diaperionus (lesser mealworm) for human consumption. The Commission also gave the green light to have partially defatted powder of Acheta domesticus (house cricket) sold on the market as a so-called "novel food." (www.food.ec.europa.eu). As of today, Small Giants has already

transferred all the logistics to Italy. Moreover, Francesco and Edoardo have already identified the Italian food companies that will produce Small Giants' products based on the recipe created in a close collaboration with a local food technologist.
Meanwhile, 2023 started positively with more than 400 online orders in January alone. Today, the company's products can be purchased online or in physical stores in more than 10 countries. Furthermore, Small Giants has just secured an exclusive deal with Zabka, the biggest food retail chain in Poland, to sell their products (www.zabkagrou.com). In Italy, Small Giants can be found in Vitamin Center, but the company will soon sign other partnership deals which will make their product available on a national scale. Beyond improving its reach, the company is also expanding its portfolio with the launch, that took place in May 2023, of a new product called Easy Mix, which accentuates burgers in two different styles. To achieve this ambitious plan and support its rapid growth, Small Giants has recently launched a new round of equity crowdfunding. Francesco and Edoardo have decided to launch the campaign on Mamacrowd (www.mamacrowd.com), the most important Italian platform for equity crowdfunding investments, with the goal of raising 500,000 euros in the 30 days following the launch. The fundraising will support Small Giants' growth by helping the company develop new strategic partnerships with suppliers, co-manufacturers, and distribution. The funds will be dedicated to marketing and sales activities in conjunction with the first listings in large-scale distribution, as well as strengthening the team and R&D. The equity crowdfunding was launched on June 21, 2023. In less than one-month, Small Giants was able to collect 787,901 euro from 491 investors (Figure 1). The next section will explain the main reasons behind Francesco and Edoardo's decision to begin this exciting journey, as well as the exponential growth of the insect-based food industry.

Why Eat Insects?

There are three essential reasons to consume insects: addressing hunger, addressing climate change, obtaining nutritional benefits.

On the first point, there are millions of people right now who are suffering from food insecurity. Food security, as defined by the United Nations' Committee on World Food Security, means having physical, social, and economic access to sufficient, safe, and nutritious food that meets all people's food preferences and dietary needs for an active and healthy life. There are scores of people today who do not enjoy food security. According to a United Nations report, in 2022, "between 820 and 920 million people in the world" suffered from hunger. Meanwhile, 2.4 billion people worldwide lack sufficient access to safe food. Russia's invasion of Ukraine is increasing food prices across the globe, making it even more difficult for those with low incomes to access food. The FAO (www.fao.org) reports that the global Food Price Index (FPI) averaged 159.3 points in March 2022, up 17.9 points (12.6%) from February. This is the highest level since the FPI's creation in 1990. The recent surge reflects new all-time highs for vegetable oils (248.6 points) and cereals (170.1 points), evidencing the strong negative effects of the war. For example, Lebanon (396%), Zimbabwe (75%) and Turkey (70%) experienced the highest rate of food price inflation between February and March (see Figure 2). According to rapid phone surveys done by the World Bank, 48 nations across the world reported "a significant amount of people" experiencing food shortages and resorting to minimizing food consumption due to financial struggles. Food shortages greatly affect people's overall health, and children are particularly susceptible to the impacts of inadequate nutritious food (e.g., malnutrition). Because nutritious food generally costs more, a nutritious meal is out of reach for many impoverished people.

By 2050, the expected global population will exceed nine billion people, according to data presented by the United Nations. To keep up with the food demands of a growing population, global agriculture production needs to increase by 70%. However, the agricultural industry faces continuing threats from droughts, natural disasters, and soil degradation. Record temperatures and prolonged droughts in 2022 led to sharply reduced crop yields in many regions, with the impact likely to extend through 2023. 'Heatflation' has already become part of the agricultural dictionary, explaining how higher temperatures lead to higher prices. For example, the massive floods in Pakistan from July to October 2022 inundated a third of the country and washed away nearly half its crops, at an estimated cost of $2.3bn. According to the FAO, 63% of the damage and loss from disasters occurring between 2008-2018 was felt by the agriculture sector.

Adding to these skewed numbers, 80% of all agricultural land is used for livestock production, while meat only represents 15% of the global human diet, according to the French National Research Institute. A large proportion of the arable land used for crops goes toward animal feed. This brings in the second reason for consuming insect, that is climate change. Indeed, greater land use for livestock leads to more deforestation. The biggest driver of deforestation in the Amazon rainforest – considered by many to be the Earth's most important terrestrial carbon reserve, storing an estimated of 123 billion tons of carbon – is animal agriculture, which has been tied to 75 percent of coverage loss. Farmers in the Amazon cut down trees to build ranches where cattle

and other farmed animals can be produced, as well as to create fields for growing corn to feed farmed animals. Currently, food systems account for 35% of global human carbon emissions, with animal-based food amounting to 57% of the total (Xu et al., 2021). Unfortunately, livestock production is an unsustainable practice resulting in water pollution, greenhouse gas emissions and deforestation. Raising animals for food contributes to 16.5% of greenhouse gas pollution, according to the FAO. Moreover, livestock production uses far more water than growing crops like soy or lentils. For example, beef production requires 15,415 liters per kilogram of meat, 112 liters per gram of protein and 153 liters per gram of fat. One third of all the water used by the animal agriculture sector goes toward the production of beef. These broken food systems are pushing scientists to explore other dietary solutions that might help reduce carbon emissions to save the future of our planet; eating insects might be part of this solution.

About 5.5 million insect species are available worldwide, of which approximately 1 million have been described. Of this number, more than 2,100 species are known to be edible. Among these edible insects are beetles, caterpillars, ants, grasshoppers, true bugs, dragonflies, and cockroaches. Scientists claim that changing our diet to include insect-based food products could cut the environmental impact of global systems by up to 85%. Insects are raised in warehouses and thus utilize less farmland and feed (See Table 1). Insects can be farmed intensively without compromising their welfare: They're happier when they're close to many other insects of the same species. Insect lifecycles are also highly conducive to factory farming: they either need or produce heat based on their stage of life, so an indoor farm can be more efficient than an outdoor farm in a warmer climate.

For example, the emissions of greenhouse gases per kilogram of mass and NH3 of three edible insects – *T. molitor, A. domesticus, and Locusta migratoria* – are 10 times lower than pigs and 20 times lower than cattle. Furthermore, the methane output of cockroaches and beetle larvae is more than 20 times lower than that of cattle and is slightly lower than that of pigs. In addition, a recent study found that crickets release 12 times less ammonia than pigs. Furthermore, insects are low-cost and easily accessible, while also being 12-25 times more efficient at converting energy into protein than farm animals. For example, crickets need six times less feed than cattle, four times less than sheep and two times less than pigs, according to the FAO. The main reason behind this efficiency is that insects are cold-blooded and therefore waste less energy maintaining their body heat. Finally, insect farming produces much less waste: The meat of larger animals is frequently wasted, but considering that insects are smaller, it is easier to consume them without waste.

Last but not least, from a nutritional standpoint insects can serve as sustainable alternative sources of proteins and other nutrients. Insects are rich in essential amino acids and proteins. Indeed, they contain 65% protein, providing more protein than chicken, pig, and beef (Ordoñez-Araque et al., 2022). The protein content of an insect is 20-76% of dry matter, depending on the insect's type and development stage. For example, the Orthoptera group of insects, that contains grasshoppers, yields the highest protein content. One 3.5-ounce portion of grasshopper typically

contains between 14 and 28 grams of protein (www.eatcrickster.com). Insects also contain more vitamins and minerals than beef, including iron, zinc, and magnesium.

With all these advantages, insects represent a hot market that is expected to reach a value of $9.6 billion by 2030, making it a viable business venture as well. In the U.S. alone, there are 60 insect start-ups (www.globenewswire.com). Many of these startups focus on turning insects into food for humans: an initiative focused on reviving the traditional food practices of Native Americans in the name of sustainability. Yet, producers and retailers in the industry face enormous social and cultural challenges that industry players and governments have to overcome for the good of our planet and all the people on it. In the following sections, we will discuss these major challenges alongside the actions that business organizations, such as Small Giants, can take to hasten the adoption of insect-based food products.

The Business Problem: Insects Are Disgusting

Despite the numerous health and environmental benefits related to insect consumption, Westerners are still reluctant to include them in their regular diet. A recent study conducted simultaneously across 11 EU countries (Austria, Belgium, Germany, Greece, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Slovenia, and Spain) found that only 10.3% of the respondents declared that they would replace meat with insects (Khatsenkova & Elton, 2023). The survey found that Western consumers tend to underestimate the environmental impact of their own eating habits and are therefore less willing to engage in more sustainable practices (www.beuc.eu). Moreover, in the domain of food, Westerners associated "sustainable" with environmentally friendly, local, or without GMOs and pesticides; half of them said that sustainability concerns have no influence on their eating habits. Furthermore, two thirds of the respondents were open to changing their eating habits and including sustainable food for environmental reasons, but only in terms of reducing their food waste, switching to more seasonable fruit and vegetables, or perhaps eating more plant-based food. However, they were more reluctant to decrease their dairy consumption, replace meat protein with less conventional sources of protein, or spend more money for sustainable food. Many Westerners remain unaware of the numerous health and environmental benefits of replacing conventional meat with insect food products; thus, raising their awareness about today's supply chain challenges and the value of insects is a critical first step.

In this vein, the biggest challenge that Small Giants continues to face is Western consumers' acceptance and adoption of insect-oriented diets (Figure 3). While insects are commonly eaten in many regions worldwide, Western consumers tend to perceive them as disgusting. Disgust—defined as a reaction of the behavioral immune system that intends to avert interaction with and consumption of potentially noxious substances (Hartmann et al., 2018)—presents major challenges for consumers' acceptance of insect-based foods, more so than other novel foods such as plant-based burgers or chia seeds. According to the literature, insect-based foods are perceived as disgusting because of their sensory properties (Sogari et al., 2018). Consumers generally attribute aversive sensory properties to insects, such as being slimy and mushy (Tan et al., 2016). Western consumers lack knowledge of and experience with eating insects, and consequently assign little importance to the taste of insects. Without first-hand experiences to change their minds (Tan et al., 2017), consumers may form misconceptions about insects' taste based on cultural beliefs that associate insects with pests and filth. The mere idea of their presence within a food could generate a disgust response, even if their properties are imperceptible (Ardoin & Prinyawiwatkul, 2021). It is thus important to consider the social-cultural factors when evaluating acceptance (Barsics et al., 2017; Jensen & Lieberoth, 2019).

In short, Westerners may see insects as a culturally inappropriate food and might thus be dismissed due to the perceived negative associations. Certain culturally inappropriate foods or other uncommonly eaten animals (such as cats and dogs) and animal parts (such as viscera) may elicit disgust due to being perceived as tasteless and unsafe to eat. Many Western countries associate eating insects with a precarious lifestyle and primitive behavior (Szendrő et al., 2020). This is largely due to the fact that edible insects have never become a significant part of Western food

culture and, thus, people may be reluctant to accept insects as a nutrient source (Myers & Pettigrew, 2018). In short, the food items that people eat are mainly a matter of custom and fashion, and thus the aversion to eating insects can be attributed to prejudice.

On this basis, a major hurdle facing Small Giants is simply consumers' extremely low willingness to try insect food products for the first time. People's negative associations are often enough to reject the food before tasting, which significantly reduces the number of marketing actions that Small Giants can take to overcome consumers' resistance. Granted, there are individual traits that may move the needle, such as gender or neophilia/-phobia (i.e., the love/fear of novel experiences) (House, 2016). And more broadly, the past is full of examples where food acceptability changed over time. For example, tomatoes were considered poisonous in Britain and avoided for over 200 years. Lobsters, now an expensive delicacy, were formerly so abundant in the North America that they were served to prisoners and commonly used as fish bait. Lobster only became fashionable to eat after the mid-18th century – and its popularity has surged since then, with the global lobster market being expected to reach $11bn by 2027.

To summarize, the main adoption barrier that companies like Small Giants must overcome is consumers' lack of acceptance of insect food products. Among Western consumers, the major drivers of resistance are the perceived disgust and health-related risks. The disgust likely stems from Westerners' aversion to insects' sensory properties and the belief that their consumption reflects primitive behaviors. Likewise, they commonly see insects as transmitters of diseases and infections, which fuels the perceived health risks. To compound the problem, insect food products are relatively expensive compared to their conventional counterparts (e.g., chicken, pork) and many Western consumers are not willing to pay the premium price. Finally, most Western consumers tend to underestimate the environmental impact of their own eating habits and are therefore less willing to engage in more sustainable practices. Many simply do not believe that changing their eating habits (e.g., replacing conventional meat with insects) will have a huge impact on the environment.

In the next section, we will present the marketing actions that Small Giants took to overcome these challenges. By starting with marketing research and then integrating the generated consumer insights, Small Giants managed to reduce consumer resistance to their products and boost their market performance.

The Solution: Rebranding Powered By Marketing Research

It is important to point out that, before its rebranding as Small Giants in 2020, the company (and by association, the brand name) was Cricke. In the following sections, we will describe the entire process – starting with the company's (e.g., Cricket) initial brand positioning, and then explaining how Francesco and Edoardo leveraged the insights of marketing research to transform their company by changing the brand name and positioning, the product packaging, the marketing communication, and the subsequent introduction of new products in the company portfolio.

Initial Positioning

As previously discussed, the major selling points of insect food products are: 1) Rich in protein, minerals, and vitamins; 2) A potential solution to food insecurity; 3) Could help in the reduction of greenhouse gas emissions, which are the major cause of climate change; 4) Demand less water and land compared to conventional livestock. Given these benefits, Francesco and Edoardo first tried to position Cricke as an insect food brand offering healthy, sustainable, and tasty food products (see Figure 4). But as previously discussed, research suggests that Westerners perceive insect foods as disgusting, unhealthy, and of meagre environmental impact. Therefore, the first and most logical step was to validate or reject this assumption, as well as examine the impact of the company's current positioning, via marketing research. While firms commonly utilize qualitative marketing research for this purpose (e.g., individual interviews, focus groups, etc.), recent studies suggest that traditional qualitative approaches can produce biased results, due to consumers' unwillingness to share sensitive information or their lack of access to such information, especially when the research topic involves important social implications (Pozharliev et al., 2015).
Therefore, Cricke decided instead to use an Implicit Association Test (IAT), which is a measurement of subconscious associations between people's mental representation of objects (concepts) in memory (Messner & Vosgerau, 2010). Specifically, the IAT measures the strength of associations between concepts (e.g., insect food products) and evaluations (e.g., disgusting, tasty), which represents a reliable measure of respondents' implicit attitudes (Maison et al., 2004). The main idea with an IAT is that responses are easier to make when closely related items share the same response key. The research was designed and executed by marketing scholars at Luiss University. In the first part of the IAT, Western participants recruited to Prolific platform were asked to sort words relating to the concepts (e.g., insect food, conventional food) into categories. So, if the category "Insect food" was on the left, and a picture of an insect cracker appeared on the screen, they would press the "e" button on the keyboard. In the second part of the IAT, participants were asked to sort words relating to the evaluation (e.g., healthy, unhealthy). So, if the category "healthy" was on the left, and a pleasant word appeared on the screen, they would press the "e" button on the keyboard. The third part of the IAT combined the categories so that participants had to sort both concept and evaluation words. Here, the categories on the left-hand side would be Insect Food/Healthy and the categories on the right-hand side would be Conventional Food/Unhealthy (see Figure 5). It is important to note that the order in which the blocks were presented varied

across participants: Some people saw the Insect Food/Healthy, Conventional Food/Unhealthy part first while other people saw the opposite (Insect Food/Unhealthy, Conventional Food/Healthy) first. The fourth part of the IAT switched the placement of the concepts: If the category "Insect Food" was previously on the left, now it was on the right. In the final part of the IAT the categories are combined in a way that is opposite to what they were before.
The IAT score is based on how long it takes a person, on average, to sort the words in the third part of the IAT versus the fifth part of the IAT. We would say that a person has an implicit preference for conventional foods relative to insect foods if they more quickly categorize words when Conventional Food and Healthy (and Insect Food and Unhealthy) share a response key, relative to the reverse. This is exactly what the research team found: Even though statistics and previous research show that insect foods are healthy, sustainable and tasty, the participants maintained opposite implicit attitudes. For one, they introspectively identified insect (compared to conventional) food as more disgusting, unhealthy, and less sustainable (Pozharliev et al., 2023). Second, they more strongly associated the brand name Cricke (relative to other brand names) with negative words such as insects, disgusting, repellent, unhealthy, harmful, etc. With this strong evidence in hand, Edoardo and Francesco understood that they needed to alter their positioning strategy and brand management. But to initiate this transformation, they first needed additional consumer insights.

Marketing Research

To gain a better understanding of consumer responses toward insect foods, Francesco and Edoardo once again collaborated with the marketing research team from Luiss University. Together, they planned a series of lab and online experiments aimed at learning more about how individual differences and product characteristics shape consumer perceptions, attitudes, and the willingness to try (hereafter WTT) insect food products.
Initially, the research objective was to evaluate consumers' reactions (in terms of feelings of disgust toward and WTT the insect-based food product) after manipulating key product characteristics, such as the type of insect-based food product (i.e., hedonic vs. utilitarian) and the presence (vs. absence) of the insect image on the front packaging. These experiments revealed how such product-related elements interacted with relevant dispositional characteristics (such as consumers' health consciousness levels and food neophobia). Importantly, the research team detected conditions that could reduce consumers' feelings of disgust and thereby inform Edoardo and Francesco's subsequent marketing actions. Specifically, the team focused on whether food products are mainly hedonic or utilitarian (Alba & Williams, 2013), where the former (vs. latter) are primarily characterized by affective, experiential, and health-unrelated benefits (vs. cognitive, functional, and health-related benefits) (Wang, 2017). However, rather than making a general hypothesis about whether hedonic or utilitarian insect-based food products can reduce the feelings of disgust, the research team focused on the effect of food product type joint with the effect of a

consumer individual trait, health consciousness, as a moderator (Chen, 2011), thus qualifying an interaction effect between food product type and health consciousness. This idea stems from previous empirical research showing that individual personality traits may shape the impact of marketing strategies and actions aimed at reducing negative responses toward food products (Mai & Hoffmann, 2012). Following the existing literature, the research team predicted that less health-conscious consumers will experience less disgust for hedonic (than for utilitarian) insect food products, while more health-conscious consumers will report less disgust for utilitarian (than for hedonic) insect food products. Two experimental studies confirmed these assumptions.

Next, the research team focused on the visuals of the packaging, given that the visual elements (e.g., images, product information and brand name) of packaging design serve as a powerful, cost-efficient tool for communicating sensory features about the product and shaping consumers' behaviors (Togawa et al., 2019). The team specifically emphasized the image of the insect (Figure 6), in line with past research suggesting that presenting insects in their original form is likely to generate negative consumer responses such as disgust and avoidance (Baker et al., 2016). In particular, the research team examined whether the presence or absence of an image of the insect on the product packaging influenced consumers' disgust responses to—and consequently, their WTT – insect-based food products (Figure 7).

Concurrently with this, the research team decided to examine how another consumer individual trait—namely, food neophobia—affects disgust toward and WTT insect food products. As previously said, food products that deviate from common cultural practices can allure more adventurous consumers while potentially repelling others who are less fascinated by new and unusual foods. The latter behavioral response, known as food neophobia, describes consumers' negative attitude toward novel foods (Hartmann & Siegrist, 2016). The underlying motivations for this aversion include negative taste expectations (Sogari et al., 2018), perceived dangerousness (Martins & Pliner, 2006) and low levels of expected enjoyment (Gmuer et al., 2016). Furthermore, neophobic consumers are predisposed to be disgusted by insect-based products and thus less willing to try them for the first time (Vartiainen et al., 2020). Because of food neophobic consumers' strong aversion to insect-based food products, removing the image of the insect from the product packaging might not be sufficient to alter their perceived disgust and WTT (Lombardi et al., 2019). On the other hand, consumers with lower levels of food neophobia are more willing to try novel foods; thus, removing the image of the insect from the product packaging might reduce disgust and enhance their WTT (Wilkinson et al., 2018). The results of two additional studies confirmed these arguments: removing the image of the insect from the product package lowered the disgust response toward the insect food products, thus increasing WTT, but only for consumers with low levels of food neophobia. The research findings offered specific marketing actions that the start-up could execute to reduce consumers' disgust and increase their willingness to try such products.

Repositioning and Changing the Product Packaging

Segmentation and Targeting

One potential challenge for insect food producers such as Small Giants looking for an effective strategy to speed up the adoption of insect food products is understanding what types of food products might be more easily accepted by consumers. The results of the marketing research indicate that consumers' health consciousness is a useful predictor of their affective and behavioural responses to hedonic (vs. utilitarian) insect food products. In particular, the marketing research reveals that less health-conscious consumers show lower disgust to hedonic products (e.g., cricket chips), while more health-conscious consumers display lower disgust to utilitarian insect-based products (e.g., protein bar). Therefore, the first actionable insight for Small Giants was to include health consciousness measures among their segmentation criteria and use the results to better allocate resources and tailor their marketing activities. For instance, Small Giants could introduce a financial reward program, with the objective of introducing consumers to the cricket crackers and motivating them to try it. The goal would be to prompt less health-conscious consumers to consider hedonic insect products. Moreover, Small Giants could initially focus their marketing resources on promoting their hedonic products to less health-conscious first-time users. It is worth noting that Small Giants is likely to face generic competition from plant-based meat substitutes. Thus, Small Giants might consider introducing their own plant-based products. This product-based strategy aligns with a recent study by Kivetz and Zheng (2017), who found that promotions are more effective in driving purchase decisions for hedonic rather than utilitarian products.

Packaging visuals

Product-based strategies for boosting consumers' reactions to insect foods usually focus on the use of familiar and liked flavors (Cicatiello et al., 2016). However, using liked flavors does not always increase consumers' WTT novel foods (Tan et al., 2017). To encourage Westerners to integrate insect foods into their diets, it is necessary to improve the sensory experience of such products (Piha et al., 2018). Specifically, previous research suggests that the visual appearance of the insect, the perceived mouth feeling, and aversive textural properties are the most important sensory drivers of such foods being rejected based on disgust (Martins & Pliner, 2006). The Luiss team's marketing research supported these assumptions, as the visual appearance of the insect on the product packaging triggered a disgust-based food rejection. Thus, the second actionable insight for Small Giants was to remove the image of the insect from their product package. Notably, the effect of removing the image was moderated by consumers' food neophobia: Respondents who were more open to novel foods had more variable disgust reactions to packages with and without the insect image. Operationally, Small Giants could adopt food neophobia measures

as an additional consumer segmentation criterion. That is, they could use the scores on this variable to reach different consumer groups with different insect-based food product versions.
While the research findings clearly indicated that removing the image of the insect carried certain benefits, firms must consider that removing any references to insects can be seen as deceptive and produce negative consumer reactions (Kim, 2006). Furthermore, concealing any cues of insects may lower disgust in the short run, but may intensify it in the long run since it perpetuates the notion that insects are not conventional food and therefore something that should be avoided (Koch et al., 2021). Therefore, using stylized (e.g., less realistic, more human-like) image of an insect could lower disgust in the short-term while also enhancing public exposure to insect-based food. As it happens, this is exactly what Small Giants did. Figure 7 compares the old (Cricke) product package with the new (Small Giants) one. Following the insights generated by the marketing research, and with the help of a UK-based advertising company, Small Giants created a new stylized insect with humanoid features (e.g., wearing clothes).

Less is more

The results of the marketing research suggest that promoting a product's healthiness and sustainability, especially on package, is not necessarily the best choice. Indeed, the researchers found that shifting the focus from health- and sustainability-related benefits to other more abstract, affective, and social benefits improved consumers' responses to insect food products, especially in the case of first-time users. It seems unlikely that simply informing people about insects' high nutritional value or the positive environmental consequences of insect-based food products will result in a widespread acceptance of such foods. Therefore, explicit references to health benefits should be used with caution, especially when targeting less health-conscious consumers, who seem to be one of the primary consumers for hedonic insect food products. Instead, Small Giants should use more hedonic appeals that focus on the emotional or self-promotional benefits that a consumer can achieve by consuming insect foods (Amatulli et al., 2020).
Another interesting idea comes from Chitturi et al. (2008), who implied that consumers typically associate hedonic product benefits with the fulfillment of promotional goals, such as "looking cool". Thus, another possible strategy for Small Giants could be to promote their products in terms of experiential elements, such as being different, rebellious, or cool (Warren et al., 2019). For example, a communication campaign such as "Eating insect-based snacking will make you look cool" or an imperative tagline like "Eat insects. It's cool." May possibly help Small Giants overcome consumers' initial reluctance. Being perceived as cool has traditionally helped start-up brands (e.g., Apple and Facebook) surpass established competitors.
Figure 8 shows the old product packaging next to the new one, illustrating all the improvements that were made based on the research insights. Specifically, the new fun and catchy design is more suitable for targeting less health-conscious consumers, whose decision to try the product is based more on hedonic motivations (e.g., fun, cool) than rational arguments (e.g., healthy, sustainable

etc.). Consequently, the technical features of the product (e.g., high in vitamin B12, extra-virgin olive oil, diary free) have been downplayed on the package, while the image of the insect has been rendered more human-like. In short, Small Giants removed the visual elements that didn't add value and instead focused on a name and image that would catch people's attention and motivate consumers to try the product.

Rebranding

Rebranding is defined as a marketing strategy in which a new name, term, symbol, design, concept, or combination is created for an established brand, with the intention of developing a new, differentiated identity in the minds of consumers, investors, competitors, and other stakeholders. The rebranding of the company from Cricke to Small Giants was the most important step in the new positioning strategy. As previously said, the IAT showed that the brand name Cricke was strongly associated with negative words such as disgusting, unhealthy, dangerous etc. To overcome this problem, Small Giants teamed up with a UK-based advertising agency who helped them devise a brand name that aligned with the company's new positioning strategy. Indeed, the objective was to move away from the strong focus on insects and all related negative associations that they might evoke and focus on more abstract and hedonic benefits such as being cool and having fun when eating insect food. The new brand name Small Giants achieved those goals while aligning with the other visual elements of the brand positioning. Granted, every experienced marketing manager knows that before launching a new product packaging with a new brand name, it is always useful to test its performance against the old one. Therefore, Small Giants and Luiss teamed up again to pertest the new marketing stimuli.

First, they compared the old vis-à-vis new product versions using the IAT. The results of three IATs showed that the brand name Small Giants was more strongly associated with positive words such as tasty, healthy, and fun. Likewise, the new product packaging was more strongly associated with words such as cool, fun, tasty, and exciting. These tests were conducted using images of the company's products. Next, the research team performed a field study in which Western consumers were asked to review and rate the new versus old product packaging. At the end, consumers were asked if they were willing to try the product or take it with them to try later. This test was conducted using physical samples of the company's products. The results revealed that the new product packaging was better evaluated by consumers, which translated to a 50% higher likelihood of trying the product.

The final pre-test that the Luiss research team did was a neuromarketing experiment. The objective was to test consumers' physiological and brain responses to the two versions of the product packaging. Again, this last test was conducted using physical samples of the company's products. Specifically, the team used two biometrics to assess consumer emotional responses to the two product versions. The first was the Galvanic Skin Response (GSR), which measures the continuous variations in the electrical characteristics of the skin, caused by variation in sweating. The

basic premise behind the use of GSR is that skin resistance varies with the state of sweat glands in the skin. Human sweating is regulated by the Autonomic Nervous System, so if the sympathetic branch of the autonomic nervous system is highly aroused, then sweat gland activity also increases, which in turn increases skin conductance, and vice versa. In this way, the GSR can be a used as a reliable measure of physiological arousal. The second biometric was the Heart Rate Variability, which is also regulated by the Autonomic Nervous System. Positive emotions elicit an activation of the sympathetic branch of the autonomic nervous system, reflected by an increase in the heart rate. On the contrary, negative emotions elicit an activation of the parasympathetic branch, with a consequent decrease in the heart rate. Therefore, the Heart Rate Variability can be a used as a reliable measure of the valence of the emotional response.
Consumers' brain responses were assessed by means of Electroencephalography (EEG), a method that allows one to record an electrogram of the brain's spontaneous electrical activity. Previous research has found a relationship between the frontal EEG activity in the alpha frequency domain and the behavioral activation system. Coan and Allen (2003), for instance, found that a greater left frontal EEG activity is an index of approach-oriented, appetitive motivational tendencies. Moreover, Ohme et al. (2010) found that frontal left-sided EEG activity can be used as a reliable tool in examining the potential of advertising to generate approach-related responses. Therefore, frontal left EEG activity was used as an index of approach-oriented, appetitive motivational tendencies.

The results of the two neuromarketing experiments confirmed that the new product packaging evoked more positive emotional responses, and that consumers were more likely to approach it and try it. Importantly, across all studies, the research team employed samples of respondents from North America, Europe, and Australia to ensure that results would be generalizable at a cross-country level. The strong empirical evidence from the multiple studies made it clear that the new product design and brand name would help the company improve its market performance and perhaps achieve sustainable growth.

What's Next

As previously said, Small Giants was able to collect 800,000 euro from 491 investors to help with executing its new positioning strategy and support its future growth (Figure 9). One part of the money will be invested in R&D to improve the recipe for the new cracker bites and launch some new flavors. The production of the new cracker bites will be moved to Italy, which requires an important investment, but Small Giants has already identified local producers that could help with moving the entire production process to Italy. By the end of 2023, the company plans to introduce some new products – such as pasta, cookies, and protein bars – in order to increase its visibility and presence in EU markets. Having a larger portfolio will also help the company target different consumer groups. The company is also building its relationships with supermarkets: it is introducing products to the Polish market through the country's largest supermarket chain, Zabka, as well as negotiating with other big EU supermarket chains to increase its presence. For 2024, Small Giants plans to launch its ready-to-cook burger, which will be the company's first product with more than 50% of the protein content coming from insects.

References

Alba, J. W., & Williams, E. F. (2013). Pleasure principles: A review of research on hedonic consumption. *Journal of Consumer Psychology*, 23 (1), 2-18.

Amatulli, C., De Angelis, M., & Donato, C. (2020). An investigation on the effectiveness of hedonic versus utilitarian message appeals in luxury product communication. *Psychology & Marketing*, 37 (4), 523-34.

Ardoin, R., & Prinyawiwatkul, W. (2021). Consumer perceptions of insect consumption: A review of western research since 2015. *International Journal of Food Science & Technology*, 56(10), 4942-4958.

Baker, M. A., Shin, J. T., & Kim, Y. W. (2016). An exploration and investigation of edible insect consumption: The impacts of image and description on risk perceptions and purchase intent. *Psychology & Marketing*, 33(2), 94-112.

Barsics, F., Caparros Megido, R., Brostaux, Y., Barsics, C., Blecker, C., Haubruge, E., & Francis, F. (2017). Could new information influence attitudes to foods supplemented with edible insects?. *British Food Journal*, 119(9), 2027-2039.

Chen, Mei. (2011). The Joint Moderating Effect of Health Consciousness and Healthy Lifestyle on Consumers' Willingness to Use Functional Foods in Taiwan. *Appetite*, 57 (1), 253-62.

Chitturi, R., Raghunathan, R., & Mahajan, V. (2008). Delight by design: The role of hedonic versus utilitarian benefits. *Journal of Marketing*, 72 (3), 48-63.

Cicatiello, C., De Rosa, B., Franco, S., & Lacetera, N. (2016). Consumer approach to insects as food: Barriers and potential for consumption in Italy. *British Food Journal*.

Coan, J. A., & Allen, J. J. (2003). Frontal EEG asymmetry and the behavioral activation and inhibition systems. *Psychophysiology*, 40 (1), 106-114.

European Commission (2022). Commission Implementing Regulation (EU) 2022/169 of 8 February 2022. *Official Journal of the European Union*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R0169 (last accessed July 31, 2023).

FAO (2021). The state of the food security and nutrition in the world 2021: The world is at a critical juncture. *Food and Agriculture Organization of the United Nations*. https://www.fao.org/state-of-food-security-nutrition/2021/en/ (last accessed July 31, 2023).

Gmuer, A., Guth, J., Hartmann, C., & Siegrist, M. (2016). Effects of the degree of processing of insect ingredients in snacks on expected emotional experiences and willingness to eat. *Food quality and Preference*, 54, 117-27.

Halloran, A., Hansen, H. H., Jensen, L. S., & Bruun, S. (2018). Comparing environmental impacts from insects for feed and food as an alternative to animal production. *Edible Insects in Sustainable Food Systems*, 163-180.

Hartmann, C., Ruby, M. B., Schmidt, P., & Siegrist, M. (2018). Brave, health-conscious, and environmentally friendly: Positive impressions of insect food product consumers. *Food Quality and Preference*, 68, 64-71.

Hartmann, C. & Michael Siegrist (2016). Becoming an insectivore: Results of an experiment. *Food Quality and Preference*, 51, 118-22.

House, J. (2016). Consumer acceptance of insect-based foods in the Netherlands: Academic and commercial implications. *Appetite*, 107, 47-58.
Jensen, N. H., & Lieberoth, A. (2019). We will eat disgusting foods together – Evidence of the normative basis of Western entomophagy-disgust from an insect tasting. *Food Quality and Preference*, 72, 109-115.
Khatsenkova, S., & Elton, C. (2023). Fact check: Is the EU really going to force us to eat insects without our knowledge, (accessed 20.08.2023), https://www.euronews.com/green/2023/02/02/fact-check-is-the-eu-really-going-to-force-us-to-eat-insects-without-our-knowledge.
Kim, H. (2006). Consumers' responses to price presentation formats in rebate advertisements. *Journal of Retailing*, 82 (4), 309-317.
Kivetz, R., & Zheng, Y. (2017). The effects of promotions on hedonic versus utilitarian purchases. *Journal of Consumer Psychology*, 27 (1), 59-68.
Koch, J., Bolderdijk, J. W., & Van Ittersum, K. (2021). No Way, That's Gross! How Public Exposure Therapy Can Overcome Disgust Preventing Consumer Adoption of Sustainable Food Alternatives. *Foods*, 10 (6), 1380.
Lombardi, A., Vecchio, R., Borrello, M., Caracciolo, F., & Cembalo, L. (2019). Willingness to pay for insect-based food: The role of information and carrier. *Food Quality and Preference*, 72, 177-87.
Mai, R., & Hoffmann, S. (2012). Taste lovers versus nutrition fact seekers: how health consciousness and self-efficacy determine the way consumers choose food products. *Journal of Consumer Behaviour*, 11 (4), 316-28.
Martins, Y., & Pliner. P. (2006). "Ugh! That's disgusting!": Identification of the characteristics of foods underlying rejections based on disgust. *Appetite*, 46 (1), 75-85.
Maison, D., Greenwald, A. G., & Bruin, R. H. (2004). Predictive validity of the Implicit Association Test in studies of brands, consumer attitudes, and behavior. *Journal of Consumer Psychology*, 14(4), 405-415.
Messner, C., & Vosgerau, J. (2010). Cognitive inertia and the implicit association test. *Journal of Marketing Research*, 47(2), 374-386.
Myers, G., & Pettigrew, S. (2018). A qualitative exploration of the factors underlying seniors' receptiveness to entomophagy. *Food Research International*, 103, 163-169.
Ohme, R., Reykowska, D., Wiener, D., & Choromanska, A. (2010). Application of frontal EEG asymmetry to advertising research. *Journal of Economic Psychology*, 31(5), 785-793.
Ordoñez-Araque, R., Quishpillo-Miranda, N., & Ramos-Guerrero, L. (2022). Edible insects for humans and animals: nutritional composition and an option for mitigating environmental damage. *Insects*, 13(10), 944.
Piha, S., Pohjanheimo, T., Lähteenmäki-Uutela, A., Křečková, Z., & Otterbring, T. (2018) The effects of consumer knowledge on the willingness to buy insect food: An exploratory cross-regional study in Northern and Central Europe. *Food Quality and Preference*, 70, 1-10.
Pozharliev, R., Verbeke, W. J., Van Strien, J. W., & Bagozzi, R. P. (2015). Merely being with you increases my attention to luxury products: Using EEG to understand consumers' emotional experience with luxury branded products. *Journal of Marketing Research*, 52(4), 546-558.

Pozharliev, R., De Angelis, M., Rossi, D., Bagozzi, R., & Amatulli, C. (2023). I might try it: Marketing actions to reduce consumer disgust toward insect-based food. *Journal of Retailing*, 99(1), 149-167.
Sogari, G., Menozzi, D., & Mora, C. (2018). Sensory-liking expectations and perceptions of processed and unprocessed insect products. *International Journal on Food System Dynamics*, 9(1012-2018-4129).
Szendrő, K., Tóth, K., & Nagy, M. Z. (2020). Opinions on insect consumption in Hungary. *Foods*, 9(12), 1829.
Tan, H. S. G., Fischer, A. R., van Trijp, H. C., & Stieger, M. (2016). Tasty but nasty? Exploring the role of sensory-liking and food appropriateness in the willingness to eat unusual novel foods like insects. *Food Quality and Preference*, 48, 293-302.
Tan, H. S. G., Tibboel, C. J., & Stieger, M. (2017). Why do unusual novel foods like insects lack sensory appeal? Investigating the underlying sensory perceptions. *Food Quality and Preference*, 60, 48-58.
Togawa, T., Park, J., Ishii, H. & Deng, X. (2019). A Packaging Visual-Gustatory Correspondence Effect: Using Visual Packaging Design to Influence Flavor Perception and Healthy Eating Decisions. *Journal of Retailing*, 95 (4), 204-18.
Tybur, J. M., Lieberman, D., Kurzban, R., & DeScioli, P. (2013). Disgust: evolved function and structure. *Psychological Review*, 120(1), 65.
Vartiainen, O., Anna-Liisa Elorinne, Mari Niva, & Pertti Väisänen (2020). Finnish consumers' intentions to consume insect-based foods. *Journal of Insects as Food and Feed*, 6 (3), 261-72.
Wang, E. S. (2017). Different effects of utilitarian and hedonic benefits of retail food packaging on perceived product quality and purchase intention. *Journal of Food Products Marketing*, 23 (3), 239-50.
Warren, C., Batra, R., Loureiro, S.M., & Bagozzi, R.P. (2019). Brand coolness. *Journal of Marketing*, 83 (5), 36-56.
Wilkinson, K., Muhlhausler, B., Motley, C., Crump, A., Bray, H., & Ankeny, R. (2018). Australian consumers' awareness and acceptance of insects as food. *Insects*, 9 (2), 44.
Xu, X., Sharma, P., Shu, S., Lin, T. S., Ciais, P., Tubiello, F. N., & Jain, A. K. (2021). Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods. *Nature Food*, 2(9), 724-732.

Web References

https://www.crunchbase.com/organization/small-giants-8104#::text=Small%20Giants%20has%202%20investors%20including%20iN3%20Ventures%20and%20SocialFare%20.
https://food.ec.europa.eu/safety/novel-food/authorisations/approval-insect-novel-food_en.
https://zabkagroup.com/zabka-group-seeks-innovative-solutions-and-supports-startups-through-acceleration-programs/.
https://mamacrowd.com/en/project/small-giants.

https://www.globenewswire.com/en/news-release/2022/05/25/2450095/0/en/Edible-Insects-Market-Worth-9-6-Billion-by-2030-Exclusive-Report-by-Meticulous-Research.html.
https://www.eatcrickster.com/blog/reasons-to-eat-bugs.
https://www.beuc.eu/sites/default/files/publications/beuc-x-2020-042_consumers_and_the_transition_to_sustainable_food.pdf.

Figures & Tables

Figure 1: Small Giants equity crowdfunding June 21, 2023.

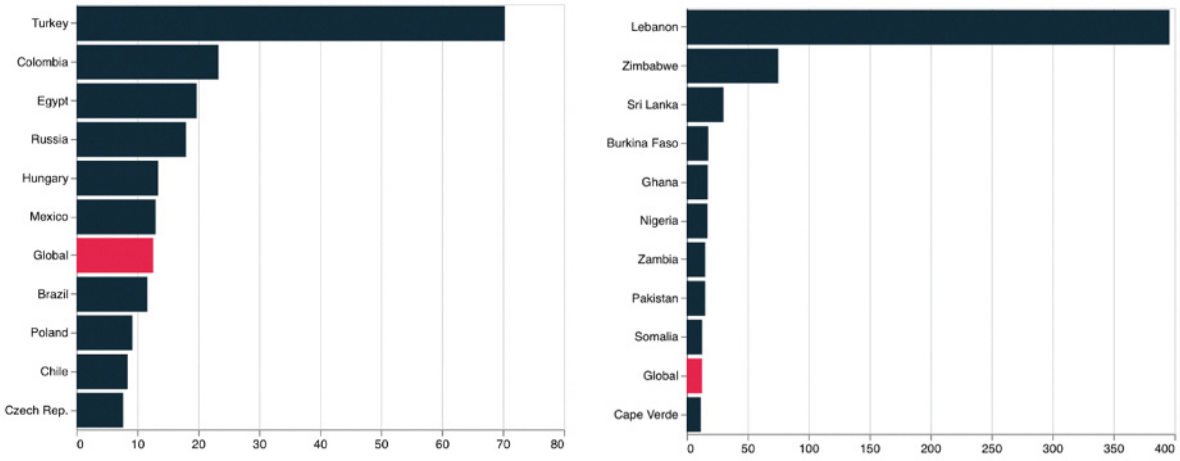

Figure 2: Developing and emerging market economies with the highest food price inflation change between February and March 2022.
Source: FAO Food Price Monitoring and Analysis, 2022

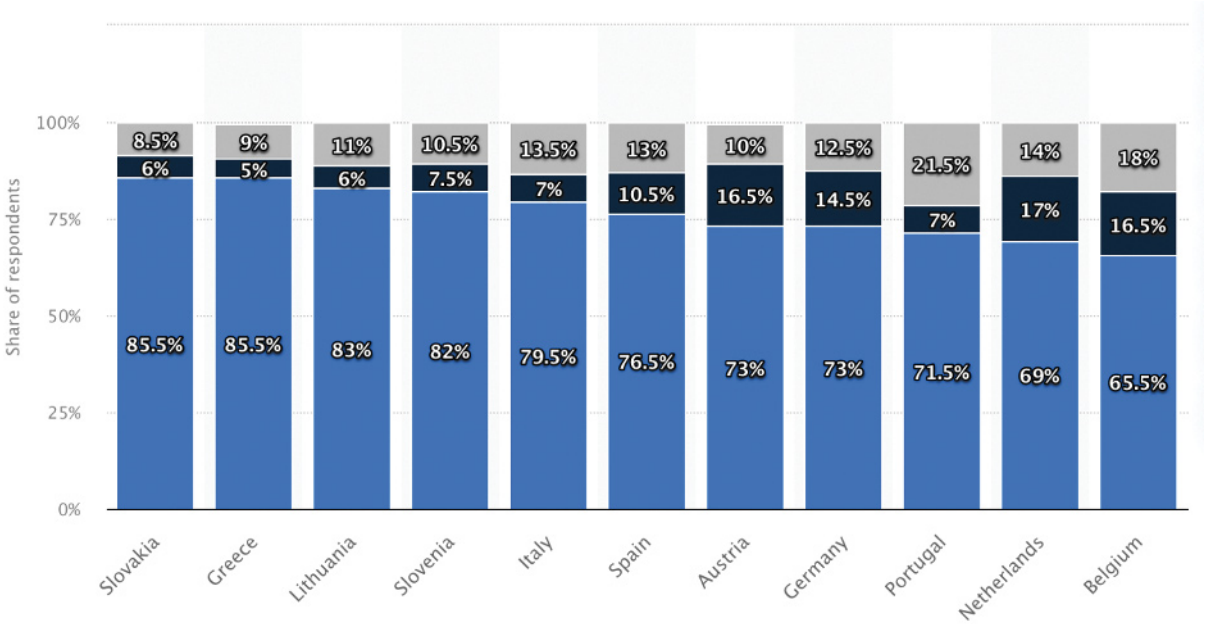

Figure 3: In the future, would you be willing to replace meat with insects and insect derivates?
Source: www.statista.com

Figure 4: Example of Cricke positioning strategy focusing on sustainability, health, and taste.

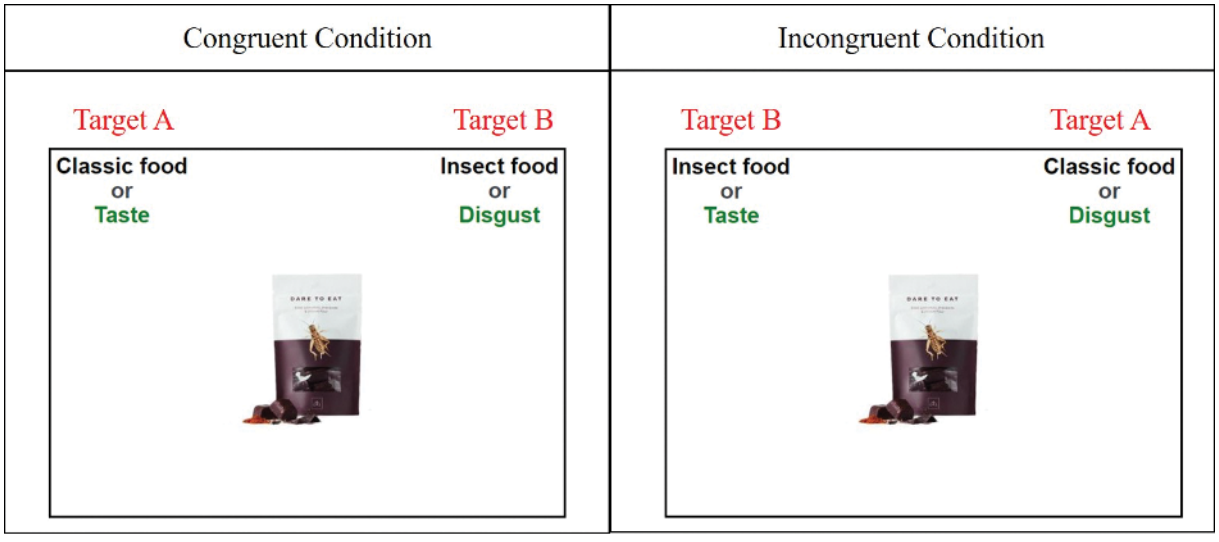

Figure 5: Example of the stimuli used in the IAT.

Figure 6: Visual elements of the product packaging before the rebranding (Ckricke).

Figure 7: The stimuli used to test consumer responses to the image of the insect.

Figure 8: Comparison between the Old (Cricke) and the New (Small Giants) product packaging.

Figure 9: Small Giants Roadmap: What's Next

AMOUNT FEED AND WATER NEEDED FOOTPRINT OF ONE KG OF MEAT		
	FEED	WATER
	1700g	20
	2600g	41
	2500g	41
	5000g	61
	10000g	151
AVERAGE GREENHOUSE GAS FROM THE PRODUCTION OF ONE KG OF PROTEIN		
	1g	
	300g	
	1130g	
	2850g	
AMOUNT OF ENERGY USED (MJ) TO PRODUCE OF ONE KG OF PROTEIN		
	MINIMAL VALUES	MAXIMUM VALUES
	170	170
	75	150
	75	250
	175	275
SQUARE METERS OF ARABLE LAND NEEDED TO PRODUCE 1 KG OF PROTEIN		
	$15m^2$	
	$45m^2$	
	$50m^2$	
	$200m^2$	

Table 1: Insect Farming vs. Conventional Livestock: Environmental Impact and Efficiency