



**FMCG Disruption by Plant-Based Proteins -
Startups and Incumbents vis-à-vis a Significant
Secular Trend**

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Dissertation written under the supervision of Peter V. Rajsingh

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Abstract

Title: FMCG Disruption by Plant-Based Proteins - Startups and Incumbents vis-à-vis a Significant Secular Trend

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"In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment." - Charles Darwin

The rapid rise of the plant-based protein market is a disruptive force for the food industry, as new entrants such as Impossible Foods and Beyond Meat are forcing incumbent firms to adjust their strategies to take advantage of growth opportunities and avoid a complete disruption of their multi-billion-dollar businesses. Survival and success are assured for those companies that can best adapt to the changing environment.

The aim of this dissertation is to explore how incumbent companies adapt their strategies to maintain competitive advantage in the face of disruption, in this case plant-based protein. To answer the research question a case study design is applied that includes qualitative research in form of expert interviews and examination of the secondary literature.

The results show that how incumbents adjust strategy is highly influenced by uncertainty which is why they pursue multiple approaches simultaneously to diversify against risks. In the early stages of a disruptive effect, corporate venture investments and the introduction of new brands typically are chosen strategic modes to respond to uncertainty. As uncertainty gradually dissolves, the acquisition of startups as well as the use of existing brands are the selected strategies. This indicates more perceived visibility about integrating novel elements into a sustainable core business strategy.

Keywords: Disruption, Innovation, Innovator's Dilemma, Strategy, Competition, FMCG, Plant-Based Proteins, Meat Substitutes

Resumo

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"In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment." - Charles Darwin

O rápido crescimento do mercado de proteína à base de plantas é uma força disruptiva para a indústria alimentar, à medida que novos entrantes como *Impossible Foods* e *Beyond Meat* estão a forçar empresas incumbentes a ajustar as suas estratégias para ter a vantagem de oportunidades de crescimento e evitar uma completa disrupção dos seus negócios de biliões de dólares.

O objetivo desta dissertação é explorar como empresas incumbentes adaptam as suas estratégias para manterem uma vantagem competitiva face à disrupção, no caso da proteína à base de plantas. Por forma a responder a esta questão, foi utilizado um caso de estudo que inclui uma investigação qualitativa sob a forma de entrevistas *expert* e análise de literatura secundária.

Os resultados indicam que a forma como os incumbentes adaptam a sua estratégia é altamente influenciado pela incerteza que define a procura de múltiplas abordagens em simultânea para diversificar contra todos os riscos. Nas fases iniciais do efeito disruptivo, investimentos empresariais de risco e uma introdução de novas marcas são tipicamente escolhidos como modos estratégicos para responder à incerteza. À maneira que a incerteza se desvanece gradualmente, a aquisição de *startups* bem como o uso de marcas existentes são as estratégias adotadas. Isto indica uma maior perceção da visibilidade acerca de novos componentes de integração de uma estratégia empresarial sustentável.

Palavras-chave: Disrupção, Inovação, Dilema do Inovador, Estratégia, Competição, FMCG, Proteínas à base de Plantas, Substitutos da carne

Table of Contents

- ABSTRACT III**
- RESUMO IV**
- LIST OF FIGURES VII**
- LIST OF TABLES VII**
- LIST OF ABBREVIATIONS..... VII**
- 1. INTRODUCTION..... 1**
- 2. LITERATURE REVIEW..... 3**
 - 2.1. THE FAST-MOVING CONSUMER GOODS INDUSTRY 3
 - 2.1.1. The Global Meat Market 3
 - 2.1.2. The Global Dairy Market 4
 - 2.2. MEGATRENDS RESHAPING THE FOOD INDUSTRY 4
 - 2.2.1. Megatrend Health & Wellness 5
 - 2.2.2. Megatrend Climate Change..... 5
 - 2.3. MARKET DISRUPTOR PLANT-BASED PROTEIN 6
 - 2.3.1. Plant-based Protein Market 6
 - 2.3.2. From Niche to Mainstream 8
 - 2.4. STRATEGY IN THE FACE OF DISRUPTION 8
 - 2.4.1. Forces that Shape Strategy 9
 - 2.4.2. The Innovator’s Dilemma 10
- 3. METHODOLOGY 11**
- 4. ANALYSIS..... 13**
 - 4.1. THE S-CURVE OF INNOVATION AND DISRUPTION..... 13
 - 4.2. FACTORS THAT EXACERBATE DISRUPTION RISKS 15
 - 4.2.1. Uncertainty 15
 - 4.2.2. Market Characteristics..... 16
 - 4.3. THE TRANSFORMATION OF THE COMPETITIVE ENVIRONMENT 17

4.3.1. Porter’s 5 Forces.....	17
4.3.2. Disruptive Startups	18
4.3.2.1 Beyond Meat	18
4.3.2.2 Impossible Foods.....	19
4.4. STRATEGIC RESPONSES OF INCUMBENT FIRMS TO DISRUPTION	20
4.4.1. Strategic Commitment to Plant-based Protein	20
4.4.2. Acquisition of Startups and Companies	23
4.4.3. Research and Development.....	24
4.4.4. Corporate Venture Investments.....	25
4.4.5. Regulation & Discreditation.....	26
5. DISCUSSION.....	27
6. CONCLUSION	29
REFERENCE LIST	VIII
APPENDIX	XII

List of Figures

Figure 1: Total Meat per capita consumption world (OECD/FAO, 2019) 3
Figure 2: Animal-Based and Plant-Based Product Comparison: Dollar Sales Growth 2018-2019 (The Good Food Institute, 2019a)..... 7
Figure 3: S-Curve of Innovation (Christensen, 2016)..... 13
Figure 4: The Process of Disruption (Christensen, 2016)..... 14

List of Tables

Table 1: Benchmark Company Progress (FAIRR, 2019) 21

List of Abbreviations

- IPO – Initial Public Offering
- FMCG – Fast Moving Consumer Goods
- CEO – Chief Executive Officer
- R&D – Research & Development
- QSR – Quick Service Restaurants
- ESG – Environmental, Social and Governance

1. Introduction

The Future of Food is a major secular theme discussed by industry specialists, strategists, futurists, and the media at large (UBS 2019). Within these discussions there is significant emphasis upon the shift to plant-based products. These products that include burger patties made from pea proteins, milk from soy and almonds, “eggs” from mung beans and sausages from Seitan, are largely being introduced by startups into the market, thereby disrupting the global food industry. After years of languishing as a niche product, plant-based products now are increasingly becoming part of the mainstream and enjoying the largest growth rates in the food industry (FAIRR, 2019). Supported by macro trends such as changing consumer behavior related to climate change, sustainability, and health concerns, plant-based protein products are experiencing exponential increases in consumer demand (FAIRR, 2019).

Beyond Meat’s spectacular IPO at \$25 a share, with shares rapidly soaring to over \$200 before pulling back a little, further demonstrates how segments in the market are pricing the future value of plant-based products (CBInsights, 2019). As start-ups like Impossible Foods and Just Inc. experience enormous hype, significant growth and are progressively stealing customers from incumbents, companies like Unilever, Kraft Heinz and Nestlé with their large capital bases and market shares are also endeavoring to compete.

This thesis explores how incumbent companies are coping with the secular market shift to plant proteins that constitutes a new macro trend. Using the plant-based protein disruption as a case study, this thesis will examine how disruptive change forces incumbents to develop new strategies to maintain competitive advantage. Hereby the main aim of this thesis is to answer the research question: How are incumbent companies adapting their strategy in the face of disruption?

The structure of the thesis begins with a literature review of the meat and dairy industries, megatrends that transform consumer behavior and the plant-based protein disruptor that emerges from these megatrends. In addition, an overview of strategy formation, its influences and theoretical background of disruption is included. The literature review is followed by an outline of the research methodology. The analysis presents the results of the research conducted and will initially evaluate how and if plant-based protein is disrupting the industry. Subsequently, it will display factors that exacerbate disruption risks. Afterwards the analysis will examine the transformation of the competitive environment and thereby rely on Porter’s five forces for the assessment. Finally, it will be explored how incumbent firms are strategically

approaching the plant-based protein disruption. In order to comprehend why companies pursue certain strategies, the positive and negative effects that these strategies entail will be examined in parallel.

Finally, the results will be critically reviewed and interpreted in a discussion. In addition, the discussion will place the results in the context of existing literature. The conclusion will provide the final answer to the research question and propose future research.

2. Literature Review

2.1. The Fast-Moving Consumer Goods Industry

The Fast-Moving Consumer Goods (FMCG) industry is one of the biggest industries in the world. FMCG are characterized as products that are usually needed daily, sold quickly and at a relatively low cost. Food, detergents and personal care products are prominent examples of FMCG (Brierley, 1995).

In the following sections, the dissertation will focus on the FMCG meat and dairy categories and present a snapshot of these markets.

2.1.1. The Global Meat Market

The global meat industry has seen a steady growth over the last decades, increasing production by over 370% since 1960 (FAIRR, 2019). In 2018 the global meat sector reached a value of 945,7 billion U.S. dollars and is expected to grasp a value of 1.142,9 billion U.S dollars in 2023 (Statista, 2019d). By far the largest revenue is generated in the USA with 139.7 billion dollars in 2018, followed by China (\$82.1 billion), Russia (\$26 billion) and Germany (\$23.8 billion) (Statista, 2019d).

Splitting the meat production by type, the world’s production of poultry surpassed pork as the most produced meat in 2018 and amounted to 123.21 million metric tons. Pork and beef amounted to 120,71 and 71,72 million metric tons respectively (Statista, 2019d). The prognosis for future development sees poultry continuously maintaining the biggest share of meat production (OECD/FAO, 2019). Although global meat consumption is expected to increase in coming years as people in developing countries gain more disposable income, the global per capita consumption of meat is expected to stagnate over the next years, which can be explained with the stagnating and decreasing consumption observed in Europe and the USA (see Figure 1). Conversely, the growth of global meat production and consumption can be explained with the rise of demand in developing countries and their upcoming middle classes (OECD/FAO, 2019).



Figure 1: Total Meat per capita consumption world (OECD/FAO, 2019)

2.1.2. The Global Dairy Market

Worldwide revenue for milk products amounted to USD 633 billion in 2018 and accounted for 18% of the total food revenue. Globally, revenues from milk products are expected to continue to grow at a CAGR of 5,1% between 2018 and 2023. The bulk of this growth comes from aspiring countries like China that exhibits a CAGR of 8.0% for milk products. Sales in Europe and the United States are at the same time estimated to grow only between 2.1-2.8 % annually, which indicates an approaching market saturation (Statista, 2019c).

Within the dairy segment, Milk and Cream generate the most revenue (39%), followed by Cheese (28%), Yogurt (26%) and Cream Cheese (7%) (Statista, 2019c). Whereas global per-capita consumption of fresh dairy products is projected to slightly increase over the coming decade, due to increasing income and population growth in developing countries, consumption in Europe and the United States is declining. At the same time, however, demand for cheese products in these countries is expected to increase (OECD/FAO, 2019).

2.2. Megatrends Reshaping the Food Industry

Consumers tend to change their buying behavior and preferences over time either very quickly or rather slowly. Trends and especially Megatrends have a major influence on this process and potentially transform whole industries. To better comprehend the importance of individual Megatrends, it is essential to define the concept.

Megatrends mark changes that have shaped societies significantly for a long time and are a phenomenon that will continue to shape them for a long time to come. Correspondingly, Megatrends are deep currents of change. They affect every single person and encompass all levels of society -- business, politics, science, technology and culture. Megatrends are changing the world slowly, but the changes are fundamental and over the long term (Zukunftsinstitut, 2019).

The following subsections present two Megatrends that have a fundamental impact on the food industry and lead to its transformation.

2.2.1. Megatrend Health & Wellness

The World Health Organization estimates that 80% of premature heart disease cases, 90% of type 2 diabetes cases and one third of cancers could be avoided if unhealthy diets were eliminated (WHO, 2004). Additionally, multiple studies linked the overconsumption of animal protein with the aforesaid diseases and recommend a reduction of meat and dairy intake (Etemadi et al., 2017).

With those studies in mind and rising concerns over obesity and food sensitivity, consumers are increasingly aware of the impact of lifestyle choices upon personal health. They are actively seeking out lifestyles that improve and maintain well-being. Healthier habits are becoming more of a norm as consumers demonstrate more holistic approaches to wellness that encompass spiritual and mental wellbeing alongside physical health (Euromonitor, 2015). Nutrition is a major component of health as consumers increasingly seek to understand the composition of their food and its nutritional value. Digitalization and developments in food tech further enable consumers to make more informed decisions and choose healthier food products (Euromonitor, 2019). While aiming for a healthier diet, consumers still want to indulge themselves in less healthy options from time to time, thus the overall goal is to find the right balance. Hence, it is not about renunciation of unhealthy food but conscious reduction (Euromonitor, 2019). This goes in hand with the rising number of people who follow flexitarian diets or consider themselves flexitarian. Unlike vegetarians or vegans, flexitarians do not aim to reduce meat to zero but seek consciously to reduce consumption to mitigate negative effects of meat on their health and the environment (Deloitte, 2019).

2.2.2. Megatrend Climate Change

Global changes in weather conditions, floods and droughts in recent years have already highlighted the major impacts of climate change on humanity and the global food supply chain, impacts that will only intensify in the future. Controversially, the agriculture business is not only suffering the consequences of climate change, it is also vigorously contributing to it. Agriculture and especially livestock farming account for around 14,5% of global greenhouse gases. Moreover, livestock farming consumes huge amounts of freshwater resources and requires 80% of all agricultural land for grazing and feed production. Cattle farming and feed production are a primary cause for deforestation (FAIRR, 2019). As the global population is expected to grow to 10 billion people by 2050, agriculture in its present form must significantly increase its land and water use in order to feed the world (World Economic Forum, 2018).

Climate change has led to a global youth movement, “Friday’s for Future,” to raise awareness about environmental protection and urge governments to implement stricter climate regulation. The movement has triggered not only changing beliefs within younger generations but also in society at large (Fridays For Future, 2019).

Accordingly, consumers are starting to become more aware of their impact on the environment and actively searching for products that are locally sourced, climate friendly, ethically justifiable and sustainable. Companies are being urged to address climate change and minimize their impacts on the environment as part of their ESG initiatives (FAIRR, 2019). More than 80% of respondents in a global Nielsen study stated that it is extremely or very important that companies implement programs to improve the environment. Moreover, this perception applies to every generation group (Nielsen, 2018).

2.3. Market Disruptor Plant-based Protein

The foregoing Megatrends have brought about a new disruptor in the food industry. Plant-based proteins are disrupting the multibillion food industry, the food value chain and the strategies of incumbent firms. These novel food products replicate animal proteins in texture, flavor and aroma through use of plant sources that can mimic the structure of animal proteins on a molecular level and/or through novel processing methods (FAIRR, 2019). They enable consumers to have a nearly identical experience while adding health, environmental and sustainability benefits. Plant protein production is also more efficient because it avoids the feed to food conversion typical of other protein forms (McKinsey, 2019a). Plant-based proteins have many application areas in the food industry, but the best known and most advanced developments are in the dairy and meat sector.

2.3.1. Plant-based Protein Market

Plant-based milk alternatives are currently the leading plant-based product in terms of sales and popularity valued at approximately USD 15.2 billion in 2019 (Statista, 2019b). In the USA, milk alternatives captured a 13% market share of the whole milk market, with a sales volume of USD 1.858 billion. While U.S. dairy milk and yoghurt sales declined between 2018 and 2019, plant-based milk grew by 5,6% and plant-based yoghurt by 39,1%. Of all U.S. Households, 37% purchase plant-based milk, which equates to over 45 million households (The Good Food Institute, 2019b).

Plant-based meat alternatives, also referred to as novel vegan meat replacements, are in the starting blocks of disrupting the global meat market, transforming the traditional food value

chain and surpassing the plant-based milk alternatives in terms of market size. In contrast to classical vegan meat replacements, the sensory profile of novel vegan meat replacements imitates real meat. This improved sensory profile derives from a sophisticated production process using hemoglobin and binders that are extracted from plants (ATKearney, 2019). The global market size for plant-based meat alternatives was estimated at USD 4.6 billion in 2018 and is expected to grow between 20-30 percent per year for the next several years (ATKearney, 2019). By 2040 novel vegan meat replacements could account for 25% of the global meat consumption (ATKearney, 2019). UBS and Barclays forecast that the market for plant-based meat will be worth \$85 billion and \$140 billion, respectively, by the end of the next decade (Barclays, 2019; UBS, 2019). However, it must be acknowledged that there are currently only a few types of plant-based meats on the market. Poultry, pork, seafood and fresh meat alternatives are still relatively underdeveloped product types. As food technology further develops and differences become more difficult to detect, consumer growth could accelerate and exceed current market predictions (UBS, 2019).

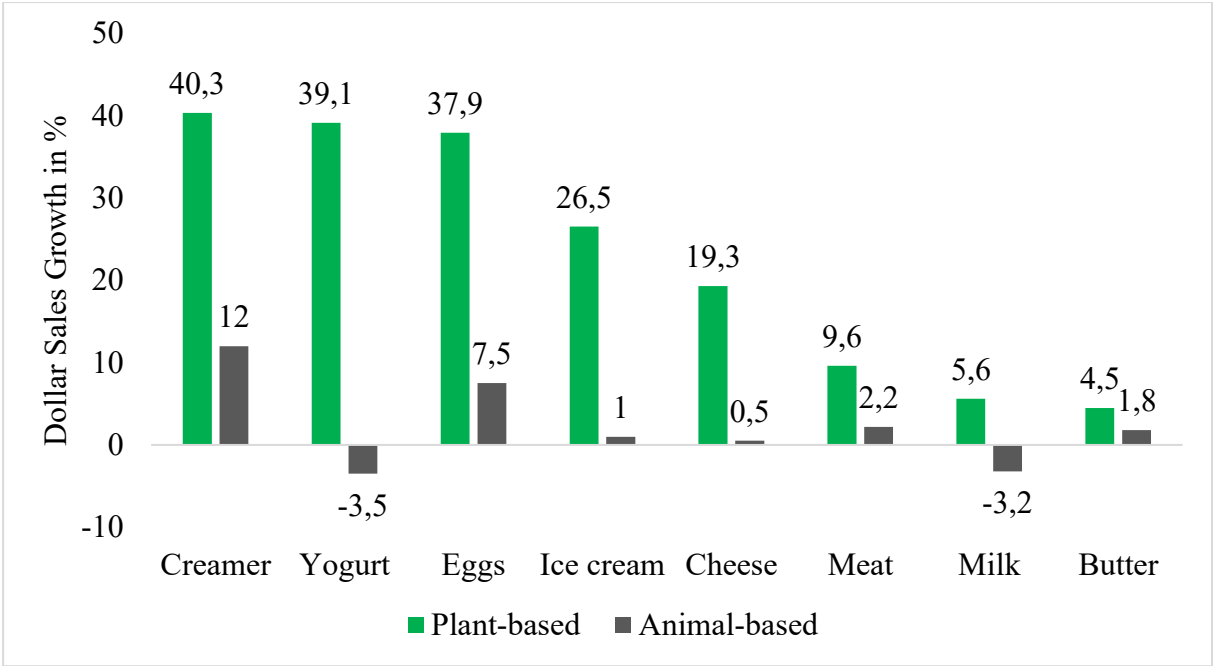


Figure 2: Animal-Based and Plant-Based Product Comparison: Dollar Sales Growth 2018-2019 (The Good Food Institute, 2019a)

2.3.2. From Niche to Mainstream

Plant-based foods have been on the market for many years, but until recently, plant-based foods were a niche product merely for vegetarian or vegan consumers. Accordingly, these products were designed for the taste, likes and preferences of vegetarians and vegans. As this target group was comparatively small, large food companies and private equity did not make major investments in this niche market, as evidenced by the number of investment deals that skyrocketed from less than 5 deals in 2009 to 46 deals in 2018. These 46 deals amounted to an investment valuation of \$673 million (The Good Food Institute, 2019a).

In addition, plant-based products were confronted with image problems and various prejudices, which resulted in lack of interest in consuming plant-based foods from the mainstream (Beverland, 2014). The influence of Megatrends and innovations in food technology have eventually led to a change in consumer perceptions and aroused great interest in plant-based foods. So-called flexitarians, who especially emerge within the Generation Z and Millennials, are making a major contribution to the current surge of plant-based protein products (Deloitte, 2019). In 2018, 63% of Millennials in the U.S considered themselves as a Flexitarian (Statista, 2019a). The new wave of plant-based products is tailored to this consumer group and offers a meat-like sensory profile without the negative impacts of consuming animal meat. Investments and innovation in food technology play a major role in the success of plant-based protein products as they contribute to advances in look, taste and texture, ultimately bringing plant-based protein to a standard that conduces mainstream acceptance (ATKearney, 2019). As investment increases and improved product iterations are developed, it can be expected that widespread mainstream adoption of plant-based foods is imminent (ATKearney, 2019; FAIRR, 2019).

2.4. Strategy in the Face of Disruption

Strategy can be defined as a plan of action designed to achieve the objectives of a firm. This plan of action is developed by every company under the influence of various factors like competition, resources and the external environment (Mintzberg, 1987). If an industry faces disruption, companies need to make the right strategic adjustments in order to successfully maintain or improve their positions in the market. The following sections will examine at the forces that shape strategy and how incumbent firms are confronted by the so-called innovator's dilemma.

2.4.1. Forces that Shape Strategy

Strategy is concerned with the future. Therefore, a firm has to make strategic choices under conditions of uncertainty, which arises from the demand structure, supply structure and externalities of an industry. It involves a trade-off between acting early and waiting and another trade-off between focus and flexibility (Wernerfelt & Karnani, 1987). This uncertainty reveals the strategy paradox that strategies with the greatest possibility of success also have the greatest possibility of failure (Raynor, 2007). Taking big risks and making decisions under uncertainty are imperative if a company wants to be in a leading position of its industry. Consequently, risk-averse companies that wait for uncertainties to dissolve will always languish and suffer from mediocre performance (Raynor, 2007). Many of these companies are displaced by the continuing tension between them and emerging start-ups, which has been characterized as a “Schöpferische Zerstörung”, or a creative destruction inherent in capitalism (Schumpeter, 1942).

Nevertheless, taking risks such as adopting disruptive innovations within an established business goes hand in hand with diversification strategy, taking the company into new markets with a new product, according to the Ansoff matrix (Ansoff, 1957). Experts on corporate strategy disclosed that somewhat diversified but relatively focused companies tend to outperform highly diversified companies (Lovallo & Mendonca, 2007). Hence, startups and younger companies have the advantage of being singularly focused whereas incumbent firms have to diversify to achieve growth, managing multiple product categories under one roof (Lovallo & Mendonca, 2007).

Furthermore, each industry has its own dynamics and competitive forces that shape strategy. Understanding forces that define the nature and degree of competition in an industry help a company to position itself to be less vulnerable to attack (Porter, 1989). Threats from new market entrants and substitute products have significant impacts on an industry’s competitive landscape. A company can only outperform rivals by establishing a competitive edge that can be preserved (Porter, 1989). Congruently, value-based business strategy argues that a firm can achieve positive added value by promoting asymmetries between itself and the other firms (Brandenburger & Stuart, 1996).

2.4.2. The Innovator's Dilemma

Innovation is a phenomenon that exists in every industry and is responsible for growth and progress. Innovation can be classified into three categories that have different impacts on companies and industries. Sustaining innovations improve the performance of established products along the performance dimensions that mainstream customers have historically valued in key markets (Christensen, 2016). Efficiency innovations improve the manufacturing process so that the firm can achieve more output with less input (Denning, 2016). Finally, disruptive innovation is a process where a new product initially lags established products, gaining a foothold instead a niche market. It gains traction slowly and finally displaces established products of incumbent companies (Christensen, 2016).

Clayton Christensen created the term "Innovator's Dilemma" which proposes that a highly successful firm will only implement sustaining innovations over time because it becomes captive to its own large customer base, focusing on satisfying their needs. This leaves the firm open to being displaced by a new market entrant. Disruptive innovations originate within small niche markets. This contrasts with the large customer base and growth expectations of incumbent firms (Christensen, 2016). The innovator's dilemma is a paradox because being responsive to customers is the basis upon which incumbent firms frame strategy and seek to maintain a competitive edge. This ends up hindering the firm from exploring new business opportunities within niche markets with a small cohort of early adopters (Schlegelmilch, Diamantopoulos, & Kreuz, 2003).

In addition to the conservative nature of a traditional customer base, internal organizational factors of an incumbent firm also can stymie disruptive innovation. To remedy this Christensen proposes an organizational capabilities framework consisting of the three factors resources, processes and values. The framework goes beyond the resource-based view framework which focuses only on whether firms can develop unique resources that lead to superiority (Wernerfelt, 1984). Processes and values support or limit an organization's capabilities regardless of its potentially superior resources (Christensen, 2016).

The nodes in a value network help determine and effect competitive strategy for a company. Continuous innovation is important to maintain the worth of a key product in a value network, while disruptive products that are not part of value networks tend to be ignored. (Christensen, 2016). To successfully implement disruptive innovations and prevent failure, Christensen recommends setting up autonomous business units within incumbent firms that do not have to

contend with growth expectations of the whole organization nor operate within existing value networks (Christensen, 2016).

3. Methodology

Qualitative research can be defined as an “array of interpretive techniques that can describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world” (Maanen, 1979).

The complexity of contexts is important for interpreting, understanding and for gaining in-depth insights through qualitative research. To understand complexities of an evolving phenomenon, such as the plant-based protein trend and incumbent firms’ strategic responses, exploratory research, case study design and extensive description are more suitable than quantitative studies (Birkinshaw, Brannen, & Tung, 2011).

The central research question in this thesis is how incumbent companies change strategy in the face of macro trends and disruption. Therefore, the qualitative methodology of a case study was applied because “it is an approach that facilitates the exploration of a phenomenon within its context using a variety of data sources.” (Baxter & Jack, 2008).

This approach allows for exploration through multiple lenses so that various factors of the phenomenon can be exposed and understood (Baxter & Jack, 2008). This approach is particularly used when the aim of a study is to answer “how” and “why” questions (Yin, 2017).

Collection of qualitative material was focused on primary data in the form of expert interviews and secondary research based on literature. A qualitative study in the form of semi-structured expert interviews with stakeholders within the food industry was conducted to gain insights about incumbent firms’ strategic thinking in light of macro trends and disruption. In addition, the interviews disclosed experts’ assessments of the plant-based protein disruption phenomenon. A semi-structured interview format was chosen because it offers structure while at the same time providing space to be exploratory within the interview framework. The five interview partners were representatives of different stakeholders in the food industry and were chosen based on their professional experience and involvement with plant-based proteins.

The first telephone interview was conducted with FCMG consultant João Lopes, a former McDonalds Vice President. The second telephone interview was with ATKearney consultant Gerrit Suhlmann, a food and agriculture specialist and co-author of an extensive industry report

on the plant-based protein disruption. The third and fourth interviews were conducted with Emma Ignaszewski and Zak Weston from the Good Food Institute. This American non-profit specializes in the research of plant-based proteins and consults for food companies regarding strategy as they move into the plant-based protein market. Laurent Marcel, CEO of Danone Manifesto Ventures, was the last interview partner.

A potential interview partner, Nora Bartha-Hecking from Nestlé Germany, was not willing to be directly interviewed, but she did send a written answer to some questions by e-mail.

Secondary research collected various information and data, which were then condensed into analyses to further validate claims from the interview partners. The literature used was primarily related to the field of strategy and gave relevant background on strategic approaches that incumbent firms follow in the face of disruption. The literature provided insight into the motives of companies to pursue certain strategies. Moreover, publicly accessible company data and information such as annual reports and company websites were used to determine how firms are addressing the plant-based protein disruption.

4. Analysis

4.1. The S-Curve of Innovation and Disruption

In order to demonstrate that the Food, specially the meat and dairy industries are being disrupted by a new technology, the S-Curve of Innovation framework will be applied to the industry (see Figure 3). According to the framework, the first product innovations of an industry offer the customer a minimal value until a basis is created after which the value increases exponentially. During periods when there is no visibility to returns, leading firms are satisfied with technological improvements achieved solely through sustaining innovation. In the explosive growth stage returns accrue in an asymmetrical exponential manner. Then, at some point in time, the value per iteration is minimal again, as the pace of technological growth exceeds the pace of demand growth, resulting in performance oversupply (see Figure 4)(Christensen, 2016).

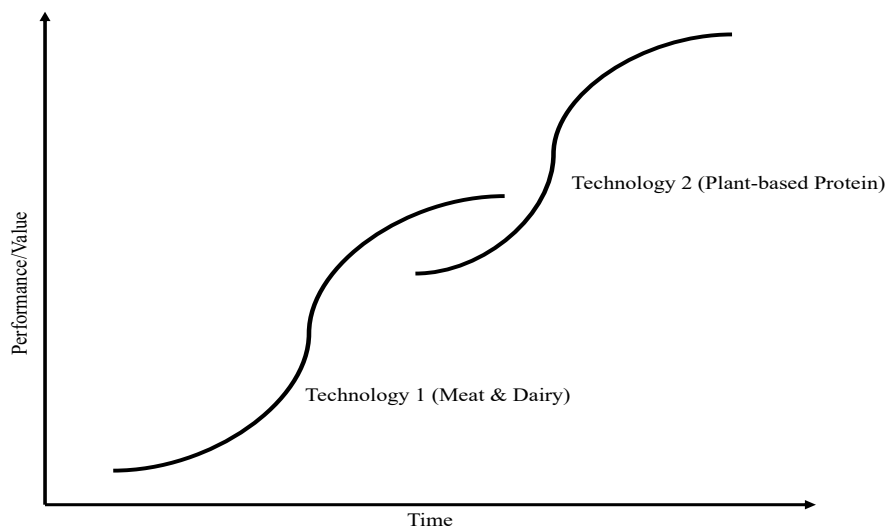


Figure 3: S-Curve of Innovation (Christensen, 2016)

In the meat and dairy industries, there is performance oversupply seen in stagnating and declining sales in Europe and the USA (see 0). Historically the protein industry developed from a local to an industrial and centralized model which created more value (Weston, 2019, Appendix 3). However, meat and dairy products have little room for further improvement as quality and quantity are physically bound and limited to the earth and the animal. Animal agriculture is therefore reaching limits with regards to creating efficiencies and scaling (Marcel, 2019, Appendix 4).

Plant proteins, on the other hand, are at the beginning of the S-curve and are about to enter the acceleration phase. New entrants have entered the market with the disruptive technologies and started a new trajectory (Christensen, 2016). The first generation of plant-based protein

products targeted vegans and vegetarians, meaning that they were also anchored in a value network. The products underperformed in traditional areas of value such as taste, structure and indulgence, so that they could not serve the mainstream. The second generation of these products evolved to a level capable of satisfying the demands of value networks associated with meat and dairy products (see Figure 4). Thus, this disruptive technology can take root in the broader market (Christensen, 2016). From a business perspective, the technology is very attractive and competitive. The meat industry’s conversion rate of plant calories into meat calories is around 15 percent, whereas the conversion rate of plant-based meat is around 75 percent. (ATKearney, 2019). Even for the most efficient meat, poultry, the industry has to feed the animal 9 calories to get one calorie of meat (Ignaszewski, 2019, Appendix 5). Furthermore, the meat industry has to breed a whole animal over the course of several months to get a few profitable parts. Plant-based products can be produced and formed into any desired part within a few hours (Weston, 2019, Appendix 3). Besides the better conversion rate, plant-based protein can also be tailored to meet consumers’ tastes and preferences (Weston 2019).

New food technology will likely not completely replace meat and dairy, but it does seem poised to become an equal protein choice alongside animal products (Weston, 2019, Appendix 3; Marcel, 2019, Appendix 4; Lopes, 2019, Appendix 1, Suhlmann, 2019, Appendix 2).

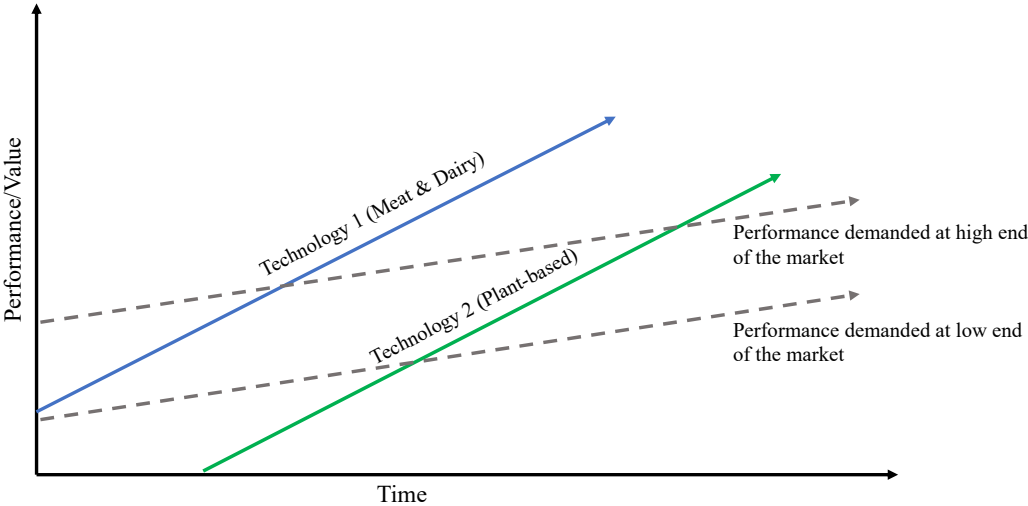


Figure 4: The Process of Disruption (Christensen, 2016)

4.2. Factors that Exacerbate Disruption Risks

When a new macro trend occurs and starts changing or even disrupting an industry, several factors affect an incumbent firm's strategic decision-making regarding how it copes with these new trends or innovations. The following two determinants (uncertainty and market characteristics) significantly contribute to incumbent companies not responding to disruption in a timely manner, or to not recognizing it at a sufficiently early stage.

4.2.1. Uncertainty

The circumstances and uncertainties in which an incumbent company operates have a great influence on its evaluation of trends, innovation and strategy. In general, incumbent firms face uncertainty with respect to concluding whether a disruptive event or innovation is indeed disruptive (Suhlmann, 2019, Appendix 2). In the case of the meat and dairy industry, incumbent companies make significant profits from animal agriculture. This day-to-day business is so profitable that it is hard to focus on new technology that is younger, less mature, more challenging and less predictable. Managers have difficulty forecasting the sustainability, stability and longevity of any potential disruptor. Therefore, taking risks on plant-based protein presents a challenge given that there is a well-functioning cash cow from conducting business as usual (Weston, 2019, Appendix 3). Additionally, another potentially disruptive technology, laboratory-produced meat, is already at the starting blocks and it is uncertain which iteration of innovation will prevail – plant-based proteins, lab-cloned meat or a combination thereof (Suhlmann, 2019, Appendix 2).

Overall, for an incumbent firm there is a lot at stake when it comes to adapting to disruptive innovations. Compared to startups, incumbents function on a different scale and level of complexity, including managing large established brands, which is why the stakes and failure risks for incumbent firms are often much greater (Marcel, 2019, Appendix 4). Correspondingly, an associated uncertainty is whether one's own competencies are sufficient to develop a product that finds broad demand. In contrast to startups like Beyond Meat, which targets a specific target group, incumbent companies serve mass markets which have different requirements (Suhlmann, 2019, Appendix 2). Incumbent companies strive to develop products with mass appeal focusing on taste and price, as these are the primary reasons for purchase (Ignaszewski, 2019, Appendix 5). Furthermore, new technologies require economies of scale to lower prices, so early movers set higher prices which incumbent firms find difficult to impose on their customers in existing markets they serve (Suhlmann, 2019, Appendix 2).

To be successful, a product needs to satisfy value demands such as cost, taste, etc. of a broad mass. The case of plant-based protein products shows that although it is relatively easy to get 90% of the product right, so far, few companies have been able to add the last 10% in terms of taste and texture. Whether 100% can be achieved or if 90% is sufficient to be successful in the market is another uncertainty (Suhlmann, 2019, Appendix 2). Companies that have the mentality or culture of only going to market with a perfect product risk not entering lucrative markets or aborting potentially successful product launches (Suhlmann, 2019, Appendix 2). Velocity is important and the risk of delayed market entry or being last to market has significant negative consequences. Inability to move with alacrity is another reason why an incumbent company might be hesitant to invest in new products (Weston, 2019, Appendix 3).

In addition, incumbent companies make various decisions that determine success and ultimately their ability to gain size and scale (Gans, 2016). Many of those decisions were the result of listening to consumers' demands (Weston, 2019, Appendix 3). Therefore, in the FMCG industry the customer base is the starting point for every strategic decision (Marcel, 2019, Appendix 4). In order to counter a disruptive threat, previous decisions and precedents must be abandoned (Gans, 2016).

4.2.2. Market Characteristics

The characteristics of the industry also have significant influence. The meat and dairy industries are examples of the old economy, male dominated, and which thrived on connections and relationships (Weston, 2019, Appendix 3). Participants in the value chain are risk-averse and conservative which leads to slower adaption of innovation and even ignoring of obvious new trends. An example of this intransigence concerns buyers from big retail chains. Food company innovation fails because buyers are stuck in traditional mindsets and refuse to purchase new products for their retail markets (Weston, 2019, Appendix 3).

Furthermore, the food industry used to be dominated by a few big corporations like Danone, Nestlé and Unilever and only over the last two decades has a more dynamic ecosystem of food technology and entrepreneurs emerged. This progress leads to a diversification of market players and threatens big corporations in their mindsets and innovation efforts (Marcel, 2019, Appendix 4).

In addition, the industry has been optimized for animal protein and the created efficiencies to decrease prices, which has helped the industry to develop to its current size (Marcel, 2019, Appendix 4). Implementing and optimizing of new technologies like plant-based protein

therefore take more time to take hold as existing processes are inflexible and entrenched (Weston, 2019, Appendix 3).

4.3. The Transformation of the Competitive Environment

Plant-based protein disruption has also gained momentum due to startups launching innovative products and strategies. Their aspirations and success result in incumbent companies no longer being able to disregard a new macro trend as customers migrate to startups products. The composition and nature of the competitive environment and therefore the profitability of the market is being transformed. The following paragraphs will evaluate the competitive environment according to Porter's 5 Forces and discuss startups strategies.

4.3.1. Porter's 5 Forces

Porter's Five Forces assess the competitive environment through the lens of potential threats that affect profitability. His five forces help companies shape and adjust their business strategies (Porter, 1989). The disruption associated with plant-based protein is significantly changing the inherent balance of forces and the overall competitive environment.

Initially, dairy and meat could not be replaced by substitute products because they lacked acceptable taste, structure and nutritional value (Lopes, 2019, Appendix 1). As a result, the competitive landscape was relatively secure and immune from the threat of substitute products or new entrants. The rise of plant-based products that mimic real meat and dairy is fundamentally changing the landscape to a situation where the threat of substitution is real for meat and dairy products (Lopes, 2019, Appendix 1). Therefore, animal products no longer only compete with each other, but also with plant-based products.

Companies that have never been active in the meat industry are entering the market, as is being seen with legume and aroma suppliers (Suhlmann, 2019, Appendix 2). Moreover, plant-based protein technologies cannot be shielded by patent protections which makes it easier for new entrants to enter and gain a foothold (Weston, 2019, Appendix 3). These developments are increasing the already intense rivalries within an industry that is characterized by fierce competition over price and shelf space (Suhlmann, 2019, Appendix 2).

This circumstance also increases the power of suppliers as food companies have to rely on specific and scarce ingredients such as pea protein to manufacture their products. Legume

suppliers are currently overwhelmed and can impose higher prices as demand continues to rise (Suhlmann, 2019, Appendix 2). Incumbent firms serve mass markets and therefore seek to calibrate products at suitable price points. Even though buyers traditionally have less bargain power in mass markets, consumers demand prices at similar levels relative to animal products (Suhlmann, 2019, Appendix 2).

Finally, if an established company does not invest in plant-based protein, eventually it will be left behind and forced to compete for market share not contested in the past (Weston, 2019, Appendix 3).

4.3.2. Disruptive Startups

Overall, startups have First-Mover advantages and momentum on their side. This is often created by media buzz that increases brand awareness and positions these companies as the face of the new plant-based trend (Lopes, 2019, Appendix 1). They can leverage this to build strong brands, create positive brand image, and establish trustworthiness and strong customer loyalty (Weston, 2019, Appendix 3). Furthermore, startups are singularly focused on alternative proteins unlike incumbent firms that have more diverse product portfolios. Their strategic approach is more flexible, faster and less restrictive, because they can develop products, test them in the market and if they fail, they simply start the process over again (Marcel, 2019, Appendix 4).

To assess how incumbent companies, react to disruption, it is useful to consider the strategy of disruptive startups, and how established companies develop their strategies in response to startups' strategic choices. In the following sections, two startups Beyond Meat and Impossible Foods are presented.

4.3.2.1 Beyond Meat

The current flagship company of plant-based protein disruption is the Californian startup Beyond Meat that makes plant-based burgers and other meat substitute products. Beyond Meat went public in May 2019, having already received a total of \$164 million in disclosed equity financing. Its stock price surged after the IPO and led to its market cap temporarily increasing more than eight times (CBInsights, 2019).

Beyond Meat's strategy focuses on two pillars which are direct sales to consumers in retail stores and partnerships with restaurant chains such as Dunkin' Donuts and McDonalds (Lopes,

2019, Appendix 1). Beyond Meat targets Flexitarians as its core customer. In grocery stores, the startup has established itself by placing its products directly next to regular fresh meat products, so that the physical and psychological separation between products is softened (Lopes, 2019, Appendix 1). Its products try to imitate real meat by having a meat-like sensory profile and convincing meat eaters to consume environmentally friendly protein. Beyond Meat proteins are pea based and significantly differentiate themselves from prior plant-based products that tried to convert people's tastes away from meat and towards plants (Lopes, 2019, Appendix 1). Initially the company sold its products to end consumers and when B2B businesses like Dunkin' Donuts made partnerships with Beyond Meat, they had to purchase a product that already existed in the B2C market, which is not typical with how incumbent quick service restaurants usually introduce new products (Lopes, 2019, Appendix 1).

4.3.2.2 Impossible Foods

Another major player in the market is the Californian startup Impossible Foods. The company already received a total of \$700 million in disclosed equity funding, with \$300 million raised in the Series E in May 2019 (CBInsights, 2019).

In contrast to Beyond Meat, Impossible Foods initially only targeted the restaurant market with its plant-based burgers. While the plant-based burger patties can be found in over 3.000 U.S. restaurants in 2018, the biggest partnership this far was launched in the beginning of 2019 with fast-food restaurant chain Burger King, rolling out the Impossible Burger nationwide in the United States (CBInsights, 2019). The underlying strategy is to offer consumers a professionally prepared product to create positive experiences around plant-based meat. Accordingly, the company targets Meat-lovers and Flexitarians who do not want to lose out on indulgence and taste. (Lopes, 2019, Appendix 1).

In 2019, Impossible Foods also rolled out its burger patties to American grocery stores with the target of being nationwide by the middle of 2020 (CBInsights, 2019).. The unique selling proposition of the company is its molecular engineering that uses heme to create bleeding and a meaty flavor. Heme is an iron-containing compound that gives meat its typical flavor. The company was able to patent their method of producing animal-like heme, but it has to rely on genetically modified soy to extract the heme (Impossible, 2019).

4.4. Strategic Responses of Incumbent Firms to Disruption

Incumbent firms have various strategic options at their disposal to react to emerging macro-trends, market disruptions and changing competitive environments. This begins with acknowledging that disruption is occurring and that it is affecting a core business and strategy. This acknowledgement needs to be followed by planning and implementing several strategic approaches to deal with the disruption phenomenon. As mentioned in 2.4.1 strategy is influenced by the degree of uncertainty inherent in the firm, hence firms with a high level of uncertainty tend to adjust their strategies in conservative and risk-averse ways. The following paragraphs will evaluate the strategic responses of incumbent food firms regarding the disruptions ushered in by plant-based protein.

4.4.1. Strategic Commitment to Plant-based Protein

Overall, most of the world's largest food companies have addressed the plant-based protein disruption phenomenon to varying degrees, revealing the extent to which they perceive and acknowledge the trend as sustainable. However, to undertake a protein transition, companies must adopt a publicly available commitment that is integrated into its core business strategy (FAIRR, 2019).

The FAIRR organization benchmarked 25 leading food firms in their activities in the field of alternative proteins using materiality, strategy, product portfolio, consumer engagement, tracking & reporting and investor engagement as evaluative criteria. A more detailed description of the criteria can be found in the Appendix 7.

The results disclosed that while a broad number of firms can be considered as active in the field of plant-based protein, only four of the 25 firms can be thought of as proactive and no incumbent firm can be deemed to be a pioneer in the field (see Table 1). The active firms recognize the environmental and health impacts associated with animal proteins. They are working to diversify their protein portfolio and have ad-hoc initiatives to engage with consumers about the benefits of plant-based proteins. However, none of the benchmarked firms demonstrate explicit C-suite-level support to undertake a protein transition, neither do they set quantitative targets that provide a roadmap for the transition (FAIRR, 2019).

Benchmark	Company
Pioneer	/
Proactive	Unilever, Tesco, Nestlé, Conagra Brand Inc, Mark & Spencer
Active	General Mills, Sainsbury's, Kerry Group, Kroger, Mondelez, Kraft Heinz, Walmart, Morrisons, Coles, Woolworth Group
Reactive	Costco, The Hershey Company, Amazon (Wholefoods), Saputo Inc

Table 1: Benchmark Company Progress (FAIRR, 2019)

This reinforces statements from interviews that most incumbent firms are in a trial and testing phase or rather in the beginnings of their transitions to protein diversification. The results from the trial phase will disclose whether incumbent firms fully commit to plant-based protein and incorporate plant-based protein into their core business strategies (Lopes, 2019, Appendix 1).

Nevertheless, no incumbent firm is likely to radically move away from animal protein products in the next two to three years, because of their customer bases and the existing supply chain difficulties of plant-based proteins (Lopes, 2019, Appendix 1). Furthermore, as animal products are culturally embedded in society, this business will not disappear in the short term (de Bakker & Dagevos, 2012). Major transformation will take place over the course of decades, hence firms do not necessarily see the need to drastically change their business models at this point in time (Weston, 2019, Appendix 3). Nonetheless, in the long-term there is going to be a shakeup in the industry which is why companies need to commit to plant-based protein to come out thriving after the dust settles, or at least hedge some of the risk (Weston, 2019, Appendix 3).

One major development that can already be seen is that the meat industry is beginning to reframe its field of activity. While it had traditionally identified as meat companies, companies have begun to restructure and identify themselves as protein companies (Ignaszewski, 2019, Appendix 5). Tyson Foods, one of Americas largest meat companies, has publicly communicated its intention to become the world's leading provider of protein (Tyson, 2019). As a strategic move, this reframing allows companies to legitimate their innovation activities internally and provide managers with guidance for action (Dougherty & Heller, 1994).

Consequently, reframing strategy is associated with successful innovation efforts as it assists breaking out of the dynamics of conformity (Dougherty & Heller, 1994).

In addition to reframing the scope of activity, the levels of commitment can be seen in the quarterly and annual reports of incumbent companies. Danone, Unilever and Nestlé, for instance, recognize changing consumer tastes and the rise of people following a flexitarian diet. Accordingly, they address the growing importance of expanding their protein portfolios into plant-based products in their annual shareholder letters (Nestlé, 2018; Unilever, 2018a).

The innovation strategy of Nestlé places particular emphasis on plant-based products (Nestlé, 2018). Nestlé is expecting that the plant-based market will develop into a multibillion-dollar market worldwide. Its vegetarian semi-finished dishes segment has recorded a growth of 33 percent this year in Germany alone, with a turnover of more than 186 million euros in the first ten months. In 2018 growth was only at 8 percent and total sales at 169 million euros (Bartha-Hecking, 2019, Appendix 6). Accordingly, the company plans to develop further plant-based products and strengthen its commitment (Bartha-Hecking, 2019, Appendix 6).

Food company Danone merged dairy and plant-based yoghurt products into one business unit so that both are on the same strategic level of importance. While plant-based products represented 15% of the sales within Danone's "Essential Dairy and Plant-based Products" business unit in 2018, the company states its ambition to triple this business by 2025. (Danone, 2018).

As part of Unilever's comprehensive sustainability strategy, the company is establishing sustainable living brands that serve a clear purpose. The company acknowledges that customers desire more natural and healthy products which is supported by the fact that its sustainable living brands grew 46% faster than the rest of the business and delivered 70% of its turnover growth in 2017 (Unilever, 2018b). Moreover, Unilever recognizes the potential of plant-based foods to lower corporate emissions and meet the self-imposed environmental goals (Unilever, 2018a).

4.4.2. Acquisition of Startups and Companies

Acquiring startups is a strategy whereby incumbent firms react to disruptive innovations. This strategy allows immediate access to new markets, to knowledge and innovation (Suhlmann, 2019, Appendix 2). Incumbents gain existing and often proven products without investing resources in research and development, nor having to deal with uncertainties surrounding whether an internally developed product will satisfy consumer demand (Lopes, 2019, Appendix 1).

Startups often lack production capabilities and supply chain management whereas incumbents can take over existing products playing to their strengths. Another reason for an established company to acquire startups is to leverage consumer trust and goodwill that comes along with the purchase. Startups have often built up a loyal base of customers and established positive perceptions in the market which the incumbents can cannibalize. (Ignaszewski, 2019, Appendix 5, Appendix 5).

Nevertheless, acquiring startups are an expensive strategy accompanied by several risks (Weston, 2019, Appendix 3). Incumbent firms face challenges integrating startups into their organizations, particularly, since startups tend to have different internal dynamics, so clashes of cultures are inevitable (Weston, 2019, Appendix 3).

Regarding the plant-based protein trend, incumbent firms have already acquired several startups and further acquisitions can be expected in the short and medium term (Weston, 2019, Appendix 3; Ignaszewski, 2019, Appendix 5). Consumer goods manufacturer Unilever acquired The Vegetarian Butchery, a Dutch company specialized in plant-based meat alternatives, in 2019 for an undisclosed sum (Marcel, 2019, Appendix 4). The transaction illustrates how an established company can take a startup's products to the next level by supply chain management, market dominance and production experience. Fast food chain Burger King announced its Europe-wide partnership with Unilever in late 2019 to launch a plant-based burger as a permanent menu option (Unilever, 2019). Unilever has thus been able to establish an advantageous asymmetry for itself over other food companies through the acquisition of the Vegetarian Butchery.

Food company Danone acquired WhiteWave with its Alpro brand, Europe's leader in plant-based dairy alternatives, for \$10.4 billion in 2017. The acquisition was a significant strategic move for Danone and signaled commitment to plant-based protein (Marcel, 2019, Appendix 4). Danone recognized shifting consumer demand prior to the acquisition and the acquisition was a firm acknowledgment that plant-based protein is not a fad, but a fundamental change that

the company should embrace. WhiteWave's portfolio was competitive and complementary to Danone's portfolio, transforming Danone from the market leader in dairy yoghurts to the market leader in dairy and plant-based yoghurts. (Marcel, 2019, Appendix 4).

4.4.3. Research and Development

A further strategic option for incumbent firms is to rely on internal R&D and to allocate resources to developing innovative products. Competitive pressures require resource allocation decisions to be made before outcomes can be fully understood. Hence, innovation efforts are prone to failure regardless of how heavily resourced they are (Klingebiel & Rammer, 2014). On the one hand, firm size and R&D expenditures exhibit a proportional relationship and, conversely, productivity of R&D efforts decreases with firm size (Buenstorf, 2016). Smaller firms are more likely to engage in radical innovation and larger firms focus more on incremental and sustaining innovation (Buenstorf, 2016). Customers have a significant impact on the nature of the R&D activities as an incumbent firm allocates resources in accordance with demands of its current customer base (Christensen, 2016). Although it is comparatively inexpensive for an incumbent to develop a product internally, it is cumbersome to overhaul a R&D department to enable it to work with new materials, ingredients technologies. Predicting market demand and traction is also difficult (Weston, 2019, Appendix 3).

Regarding plant-based protein disruption, several companies have relied on their R&D departments and allocated resources to address transformation in the industry. In this context, incumbents must also decide which brand strategy they want to pursue for products. Consumers often harbor a misconception about innovation by perceiving new brands as an innovation and product launches of large brands as simple extensions (Marcel, 2019, Appendix 4). Correspondingly, incumbents have to choose between developing a new brand or extending an existing brand.

Nestlé has identified cross-category plant-based products as a particular focus of its innovation strategy (Nestlé, 2018). Accordingly, Nestlé has adopted an established brand -Garden Gourmet, that has supplied vegetarian and vegan meals since 1985 - to extend its product line into plant-based meat products (Bartha-Hecking, 2019, Appendix 6).

Companies in the dairy industry are already a step ahead by comparison. Danone utilizes its recognized dairy brands such as Activia to introduce plant-based products as it sees the hard line between dairy and plant-based brands dissolving (Marcel, 2019, Appendix 4). In both

cases, consumers transfer existing associations, experiences and familiarities with the parent brand to the extension so companies can achieve considerable cost and time savings (Pitta & Katsanis, 1995). In addition, market and shelf-space coverage of the established brand can be expanded, making it more difficult for startups to enter the market (Aaker & Keller, 1990).

In contrast, launching new products under a new brand gives companies more freedom and flexibility in positioning and communicating their products. (Marcel, 2019, Appendix 4). As the disruption in the meat industry is more recent than in the dairy industry, there is greater uncertainty, which encourages meat companies to develop new brands. Introducing products under an established brand may not be accepted by consumers and can have negative and irreversible consequences for the whole brand and profitability (Pitta & Katsanis, 1995).

New brands which have to be built from the ground up are time-consuming and costly, since building brand awareness and image requires constant and considerable effort (Aaker & Keller, 1990). Tyson Foods and Hormel Foods, among others, are pursuing this strategy and introduced the Raised & Rooted and Happy Little Plants brands respectively in 2019 (Ignaszewski, 2019, Appendix 5). Tyson Foods built the product in internal teams that behaved like startups and operated independently with their own budgets. Under the theme “Failing Forward” the teams were able to take more risks and ultimately increase speed and agility (McKinsey, 2019b).

4.4.4. Corporate Venture Investments

Corporate Venture Investments can be characterized as a window on new technologies for incumbent firms as it allows them to keep up with current market developments and innovation (Benson & Ziedonis, 2009). Companies are able to gain superior information about technological bets placed by entrepreneurs and venture capitalists and are able to monitor outcomes of external projects. They also are able to learn from successes and failures and use these insights to help guide and redirect internal R&D (Benson & Ziedonis, 2009).

This strategy has lowest risk as the firm can only lose money invested (Suhlmann, 2019, Appendix 2). However, at the same time this comparatively conservative strategy allows only limited access to knowledge and innovation (Suhlmann, 2019, Appendix 2). Nevertheless, research disclosed that corporate venture activities can improve internal R&D productivity of established firms. Moreover, firms that consistently engage in venture financing earn greater returns when acquiring startups (Benson & Ziedonis, 2009).

Several incumbent food companies launched corporate investment arms through which they invested in early stage startups. Tyson Foods, for example, was involved in several financing rounds of Beyond Meat before it exited with insights and industry intelligence that were eventually incorporated into the development and launch of its own plant-based protein products (Ignaszewski, 2019, Appendix 5).

Another incumbent company that is very active in this area is Danone. Its subsidiary Danone Manifesto Ventures was founded in 2016 and pursues two strategic objectives. The first objective is to invest in companies with the aim of acquiring them in full at a later stage. These are usually companies that are close to Danone's core business and would benefit the overall portfolio (Marcel, 2019, Appendix 4) Examples are the investments in Sustainable Bioproducts Inc., which is developing a novel protein, and Hälsa, a startup specializing in plant-based products (Marcel, 2019, Appendix 4).

The second objective is to invest in order to learn about companies and new markets. Investments are made in companies that disrupt the food sector through different uses of technology, distribution and business models. Those investments do not necessarily have the ambition to acquire the companies but to bring new ideas and business models into the Danone corporation. Hence the venture arm also invests in companies that are further away from the core business but could impact the whole industry on a macro-level (Marcel, 2019, Appendix 4).

4.4.5. Regulation & Discreditation

While parts of the industry are enthusiastically embracing plant-based proteins, there are other forces trying to push back and discredit plant-based protein products.

For one thing, regulation is being used by the traditional animal protein lobbies to counter and slow down the explosive growth of plant-based proteins. The goal is to forbid plant-based protein companies from labeling their products as beef, chicken, milk or cheese (FAIRR, 2019). Another approach is public discreditation of plant-based products. The American Center for Consumer Freedom, backed by the meat industry, engaged in several media campaigns warning the public about plant-based meat. Ads discrediting plant-based food called them “ultra-processed imitations” and even made comparisons with dog food (O’Connor, 2019). These campaigns have multiple goals, ranging from slowing down the growth to destroying the image of plant protein products completely.

5. Discussion

The aim of this dissertation was to explore its research question: how incumbent companies adapt strategies in the face of disruption. For this purpose, we examined the disruption phenomenon (plant-based protein) and its effects on the competitive environment, insofar as these effect bear upon and impact incumbent companies. Subsequently, factors were identified that promote disruption and influence strategic adjustments. Finally, specific strategies that incumbent companies pursued were identified and evaluated.

We determined that the technology of plant-based protein has migrated from being a niche product to being part of broader value networks associated with meat and dairy consumers. The phenomenon is thus disrupting the industry in accordance to Christensen's theory, which contributed relevance and credibility to our research goals. In addition, the plant-based disruption expanded applicability of Christensen's theory and increased the efficacy and value of our research project. Even though, Christensen's thesis was initially predicated on technological products, there is broad applicability to FMCG. There is, however, a significant caveat. Compared to technological products such as semiconductors, food products do not become obsolete and are therefore unlikely to be fully displaced by the disruption phenomenon.

Regarding the research question, our analysis revealed that uncertainty across several business areas has a significant impact on strategy adjustment in light of disruption. The varied incumbent reactions indicate that companies do not pursue one specific strategy, but instead often follow a combination of several strategies that distribute and ultimately hedge uncertainty. Over time, as the uncertainty gradually dissolves, companies progressively adapt their strategies accordingly and increase their commitment to the change agent. An exploration phase is used to resolve uncertainty, test market potential and determine to what extent the company needs to adjust its core strategy. Conversely, this could lead to time delays from which companies may never recover as disruptive change moves rapidly once it has taken root. Plant-based protein offers a feasible and sustainable path to address rising global demand for proteins and late commitment implicates risks of falling behind (FAIRR, 2019).

The findings here build on existing research on uncertainty. Raynor (2007) proposed the notion of the "strategy paradox" whereby uncertainty is equally the source of strategic success as it contributes to failure. In grappling uncertainty in the face of disruption, companies focused on flexibility instead of following a single high-risk strategy (Wernerfelt & Karnani, 1987). The behavior of incumbents we examined supported claims that broad resource allocation spreads risks of unproven innovative endeavors (Klingebiel & Rammer, 2014).

Although customers have a major influence on the strategy of companies, results here do not entirely support Christensen's theory that a large customer base constrains and holds companies' innovation efforts captive (Christensen, 2016). Instead, findings imply that uncertainty is the greater determinant. The industries Christensen used to derive and justify his theory were not part of the FMCG sector, which could explain this deviation. Consumers in the food industry are persistently requesting more options, which makes it less restrictive for a company to innovate in new directions (Marcel, 2019, Appendix 4). In addition, while Christensen focuses on microeconomics, i.e. an incumbent's organization with its processes and capabilities, as a driver for innovation, our analysis suggests that also the macroeconomic secular trend and therefore the industry itself influences innovation efforts and strategy of individual firms.

Regarding firm-level individual strategies, the broad introduction of new brands in the early stages of disruption suggests that incumbents are transferring uncertainty to new brands and thereby protecting their established high-revenue brands from potential risks. Once a company chooses to utilize its established brands, as is the case with Danone, this is evidence that the company has resolved uncertainty and the macro-trend has been incorporated into its core business strategy.

Similarly, setting up a venture capital arm indicates another way to shift risk and uncertainty, as the investments are not an irreversible commitment, nor do they have a direct influence on the company's ongoing strategy and operations. Accordingly, this is a conservative strategy which allows companies to shift risk to external startups and wait for the uncertainty to be resolved (Wernerfelt & Karnani, 1987).

Acquiring startups is another strategy whereby a company, rather than using its established brands, takes risks and demonstrates a high-level commitment. Such a decision is almost irreversible, has an impact on revenues, and requires the merger of two disparate organizations. Acquisitions leverage incumbents' strengths and combine this with the complementary value of the startup. This strategy will likely be more intensively pursued in the future as more viable startups emerge and uncertainty about plant-based proteins dissolves.

Generalizing these results across industries is questionable as research only focused on the meat and dairy industries. To make broad claims, a larger number of cases with different technologies and industries would be needed. Moreover, the narrow scope of interviewees and the nature of data represents a further limitation. A broader set of incumbent companies as interview partners would have generated more insight into how incumbent companies adapt strategies in light of

disruption. Finally, due to limited access to private company data, the extent to which companies have already adapted their core business strategies could only be deduced from publicly accessible data.

6. Conclusion

Plant-based proteins have entered the mainstream disrupting the multi-billion-dollar food industry. Innovative start-ups and changing consumer behaviors are responsible for this development which is altering the competitive terrain for incumbent companies. Incumbents are endeavoring to compete, to consolidate their positions and avoid disruption. This entails that incumbent firms make strategic choices.

This dissertation aimed to answer the research question of how incumbent companies adapt their strategy in the face of disruption. By analyzing the disruption phenomenon, factors that cause disruption and influence strategy adaptation were elucidated. This study has also established how uncertainty significantly influences and shapes the strategic choices, decision-making and strategy adaptation.

Under the condition of disruption, companies focus on flexibility and follow a combination of multiple strategic approaches. As the perceived level of uncertainty gradually diminishes, strategic choices are less cautious. When a high level of uncertainty prevails, disruptive innovations are less likely to be embraced as core business strategies.

To avoid losing competitive advantage through disruption a venture capital arm is a broadly used approach to hedge risk and wait for uncertainty to be resolved. Similarly, introducing internally developed products under a new brand, allows companies to protect established brands, while exploring areas of innovation. Acquisition of start-ups has been demonstrated by incumbent companies that have recognized the change that plant protein is entailing and either do not have strong expertise in this field or want to quickly enter the market. At this level of acknowledgement companies also start removing the hard (brand-) line between animal-based and plant-based.

Future research is needed to determine which business areas (E.g. production, supply chain, marketing, customer adoption, etc.) are the major locus of uncertainty which influences strategy formation and adaptation.

To better understand the relationship between each strategy and uncertainty, future studies could look at further industries and incumbent companies that faced disruption.

Reference List

- Aaker, D., & Keller, K. (1990). Consumer Evaluations of Brand Extensions. *Journal of Marketing*, 54(1), 27.
- Ansoff, H. I. (1957). Strategies for diversification. *Harvard Business Review*, 35(5), 113–124.
- ATKearney. (2019). *How Will Cultured Meat and Meat Alternatives Disrupt the Agricultural and Food Industry*. Retrieved from <https://www.atkearney.com/retail/article/?/a/how-will-cultured-meat-and-meat-alternatives-disrupt-the-agricultural-and-food-industry>
- Barclays. (2019). Carving up the alternative meat market. Retrieved October 27, 2019, from <https://www.investmentbank.barclays.com/our-insights/carving-up-the-alternative-meat-market.html>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544–559.
- Benson, D., & Ziedonis, R. H. (2009). Corporate venture capital as a window on new technologies: Implications for the performance of corporate investors when acquiring startups. *Organization Science*, 20(2), 329–351.
- Beverland, M. B. (2014). Sustainable Eating: Mainstreaming Plant-Based Diets In Developed Economies. *Journal of Macromarketing*, 34(3), 369–382.
- Birkinshaw, J., Brannen, M. Y., & Tung, R. L. (2011). From a distance and generalizable to up close and grounded: Reclaiming a place for qualitative methods in international business research. *Journal of International Business Studies*, 42(5), 573–581.
- Brandenburger, A. M., & Stuart, H. W. (1996). Value-Based Business Strategy. *Journal of Economics & Management Strategy*, 5(1), 5–24.
- Brierley, S. (1995). *The Advertising Handbook*. London: Routledge.
- Buenstorf, G. (2016). Schumpeterian incumbents and industry evolution. *Journal of Evolutionary Economics*, 26(4), 823–836.
- CBInsights. (2019). *Our Meatless Future: How the \$1.8T Global Meat Market Gets Disrupted*. Retrieved from <https://www.cbinsights.com/research/future-of-meat-industrial-farming/>
- Christensen, C. M. (2016). *The Innovator's Dilemma: When new technologies cause great firms to fail* (3rd ed.). Harvard Business Review Press.
- Danone. (2018). *Annual Report 2018*. Retrieved from https://www.danone.com/content/dam/danone-corp/danone-com/about-us-impact/publications/en/2019/Danone-RA2018-EN-PDF-e-accessible_01.pdf
- de Bakker, E., & Dagevos, H. (2012). Reducing Meat Consumption in Today's Consumer Society: Questioning the Citizen-Consumer Gap. *Journal of Agricultural and Environmental Ethics*, 25(6), 877–894.
- Deloitte. (2019). *Plant-based alternatives: Driving industry M&A*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/consumer-business/deloitte-uk-plant-based-alternatives.pdf>

- Denning, S. (2016). Christensen updates disruption theory. *Strategy and Leadership*, 44(2), 10–16.
- Dougherty, D., & Heller, T. (1994). The Illegitimacy of Successful Product Innovation in Established Firms. *Organization Science*, 5(2), 200–218.
- Etemadi, A., Sinha, R., Ward, M. H., Graubard, B. I., Inoue-Choi, M., Dawsey, S. M., & Abnet, C. C. (2017). Mortality from different causes associated with meat, heme iron, nitrates, and nitrites in the NIH-AARP Diet and Health Study: Population based cohort study. *BMJ (Online)*, 357.
- Euromonitor. (2015). *Megatrend Analysis. Putting the Consumer at the Heart of Business. Survey Euromonitor International*.
- Euromonitor. (2019). *Evolving Trends in Food and Nutrition*. Retrieved from <https://go.euromonitor.com/ANUGA19>
- FAIRR. (2019). *Appetite for disruption - How leading food companies are responding to the alternative protein boom*. Retrieved from <https://www.fairr.org/article/appetite-for-disruption-how-leading-food-companies-are-responding-to-the-alternative-protein-boom/>
- Fridays For Future. (2019). FridaysForFuture. Retrieved October 26, 2019, from <https://www.fridaysforfuture.org/statistics/graph>
- Gans, J. (2016). *The Disruption Dilemma. The Disruption Dilemma*. MIT press.
- Impossible. (2019). Heme + The Science Behind Impossible. Retrieved December 9, 2019, from <https://impossiblefoods.com/heme/>
- Klingebiel, R., & Rammer, C. (2014). Resource Allocation Strategy for Innovation Portfolio Management. *Strategic Management Journal*, 35(2), 246–268.
- Lovallo, D. P., & Mendonca, L. T. (2007). Strategy's strategist: An interview with Richard Rumelt. *McKinsey Quarterly*, (4), 56–67.
- Maanen, J. Van. (1979). Reclaiming Qualitative Methods for Organizational Research: A Preface. *Administrative Science Quarterly*, 24(4), 520.
- McKinsey. (2019a). *Alternative proteins -The race for market share is on*. Retrieved from <https://www.mckinsey.com/industries/agriculture/our-insights/alternative-proteins-the-race-for-market-share-is-on>
- McKinsey. (2019b). It 's our job to evolve with consumers: Tyson Foods on alternative protein. Retrieved December 9, 2019, from <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/its-our-job-to-evolve-with-consumers-tyson-foods-on-alternative-protein>
- Mintzberg, H. (1987). The Strategy Concept I: Five Ps For Strategy. *California Management Review*, 30(1), 11–24.
- Nestlé. (2018). *Annual Review 2018*. Retrieved from www.nestle.com/csv
- Nielsen. (2018). Global Consumers Seek Companies That Care About Environmental Issues. Retrieved November 2, 2019, from <https://www.nielsen.com/sa/en/insights/article/2018/global-consumers-seek-companies-that-care-about-environmental-issues/>

- O'Connor, A. (2019). Fake Meat vs. Real Meat. Retrieved January 2, 2020, from <https://www.nytimes.com/2019/12/03/well/eat/fake-meat-vs-real-meat.html>
- OECD/FAO. (2019). *OECD-FAO Agricultural Outlook 2019-2028*. OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome. Retrieved from <http://www.fao.org/3/ca4076en/ca4076en.pdf>
- Pitta, D., & Katsanis, L. P. (1995). Understanding brand equity for successful brand extensions. *Journal of Consumer Marketing*, 12(4), 51–64.
- Porter, M. E. (1989). How Competitive Forces Shape Strategy. *Readings in Strategic Management*, 133–143.
- Raynor, M. (2007). The Strategy Paradox. *Deloitte Review*, (1). Retrieved from https://www2.deloitte.com/content/dam/insights/us/articles/the-strategy-paradox/US_deloittereview_The_Strategy_Paradox_aug07.pdf
- Schlegelmilch, B. B., Diamantopoulos, A., & Kreuz, P. (2003). Strategic innovation: The construct, its drivers and its strategic outcomes. *Journal of Strategic Marketing*, 11(2), 117–132.
- Schumpeter, J. A. (1942). *Capitalism, socialism and democracy*. *Capitalism, Socialism and Democracy*.
- Statista. (2019a). Americans following alternative diets, by generation 2018. Retrieved November 2, 2019, from <https://www.statista.com/statistics/875526/share-alternative-diet-us-generation/>
- Statista. (2019b). Dairy alternatives: market value worldwide by type 2019. Retrieved November 2, 2019, from <https://www.statista.com/statistics/693015/dairy-alternatives-global-sales-value-by-category/>
- Statista. (2019c). *Food Report 2019 - Milk Products*. Retrieved from <https://www.statista.com/study/48826/food-report-milk-products/>
- Statista. (2019d). *Global Meat Industry*. Statista. Retrieved from <https://www.statista.com/topics/4880/global-meat-industry/>
- The Good Food Institute. (2019a). *State of the Industry Report: Plant-based Meat, Eggs and Dairy*. Retrieved from <https://www.gfi.org/non-cms-pages/splash-sites/soi-reports/files/SOI-Report-Plant-Based.pdf>
- The Good Food Institute. (2019b). U.S. Plant-Based Market Overview - New SPINS retail sales data. Retrieved October 26, 2019, from <https://www.gfi.org/marketresearch>
- Tyson. (2019). Protein Leader | Tyson Foods, Inc. Retrieved December 9, 2019, from <https://www.tysonfoods.com/innovation/protein-leader>
- UBS. (2019). *The food revolution*. Retrieved from <https://www.ubs.com/global/en/wealth-management/chief-investment-office/investment-opportunities/sustainable-investing/2019/food-revolution.html>
- Unilever. (2018a). *Annual Report 2018*. Retrieved from https://www.unilever.com/Images/unilever-annual-report-and-accounts-2018_tcm244-534881_en.pdf
- Unilever. (2018b). Unilever's Sustainable Living Plan continues to fuel growth. Retrieved

- January 6, 2020, from <https://www.unilever.com/news/press-releases/2018/unilevers-sustainable-living-plan-continues-to-fuel-growth.html>
- Unilever. (2019). The Vegetarian Butcher announced as supplier of the plant-based Rebel Whopper® to Burger King® across Europe. Retrieved January 1, 2020, from <https://www.unilever.com/news/press-releases/2019/the-vegetarian-butcher-announced-as-supplier-of-the-plant-based-rebel-whopper-to-burger-king-across-europe.html>
- Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, 5(2), 171–180.
- Wernerfelt, B., & Karnani, A. (1987). Competitive Strategy Under Uncertainty. *Strategic Management Journal*, 8(2), 187–194.
- WHO. (2004). *What Is Happening? the Global Strategy on Diet, Physical Activity and Health*. Retrieved from https://www.who.int/dietphysicalactivity/media/en/gsf_general.pdf
- World Economic Forum. (2018). Meat: The Future Series - Alternative Proteins | World Economic Forum, (January), 31. Retrieved from <https://www.weforum.org/whitepapers/meat-the-future-series-alternative-proteins>
- Yin, R. K. (2017). *Case study research and applications: Design and methods*. SAGE Publications Inc.
- Zukunftsinstitut. (2019). Megatrends. Retrieved October 22, 2019, from <https://www.zukunftsinstitut.de/dossier/megatrends/>

Appendix

Appendix 1: Interview Joao Lopes (McDonalds)

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

He is surprised by the level of sophistication, the evolution and quality of plant-based products in the short period of time. 3-4 years ago, plant-based products were not at the same level as they are today (quality), but at a level where you wouldn't expect them to ever replace meat. He sees the development due to changing customer sentiments: More people are becoming Flexitarian and want to reduce their meat intake, however a complete move out of meat is unlikely. In general people want more options to choose from. There will always be people that want meat products but more importantly people don't want to lose the indulgence of the experience, therefore they are mostly concerned about taste and flavor. Thus, if the plant-based products become very similar to real meal in terms of taste, more people and also meat lovers will buy plant-based products.

Future evolution of plant-based protein products will determine their success. Main success factors: How close will plant-based protein products be to real meat? // How fast is the supply chain going to evolve so that the products won't be extraordinarily expensive?

McDonalds already introduced promotional plant-based products in local markets (e.g. Sweden), hence there were signs that things were already moving.

What do you see happening within the market landscape? How will the food industry change within the short, medium and longer term?

Industry is in a testing phase (McDonalds testing Beyond Meat Burgers), Outcomes will show if plant-based protein products becomes a permanent option in every market. In the next 2-3 years no big company/Chain will radically move away from beef and meat products, due to its customer base and the supply chain. Especially the supply chain is not there yet to deliver on alternative protein, you need to have scale to bring prices down, so that products are at the same price point as meat products. Mr. Lopes is not completely sure how it will evolve, market has proven to be more dynamic than expected and the similarity to meat products catches up quicker than ever expected. Hence, next year (2020) is going to be very important to determine if more

products get introduced or if it stays a product for a minority, because then some time has already passed since e.g. Burger King introduced the Impossible Burger, McDonalds tested their plant-based burger and the situation has been carefully evaluated.

From your experience how are food companies responding to changing market dynamics in the food industry?

Example of McDonalds: They are paying attention and looking at the trend because they don't want to be left behind. They are in a Testing Phase to evaluate the potential. McDonalds is operating in 120 countries. The paces of the introduction of the products and dynamics are different in markets, but the focus will be on Europe and United States.

To what extent do they need to develop new strategies to retain competitive advantage in the face of this macro trend?

At the moment they are in a trialing phase. McDonalds Philosophy: Give people more options to choose from and the freedom to choose. They currently see plant-based Burgers as another vegetarian option without completely disrupting their own offer and changing of the business model. However, the dynamic of the market can change things rapidly, if one chain/company leads the way and shows that a product can have a big customer appeal and with a good segmentation that draws people in with more frequency, others may follow and look at it in a different way. Ultimately the market is going to determine that. Nonetheless at the moment companies see it rather as one more option than "we will change the whole offering".

How can they tap into a new market that is in contradiction with their current core customer base?

Fast Food Business is built on traffic and therefore dependents on frequency and volume due to low margins. Offering more options is a way to increase frequency and volume. There is no real contradiction since the products also speak to meat eaters and therefore the customer base.

Sometimes there are untapped opportunities: Example: McDonalds noticed that parents took their kids to McDonalds but did not eat anything themselves. Accordingly, they introduced salads so that the mothers can choose another product if they don't want to eat a burger every time. (Value Denial)

What kind of strategy do/should they follow for approaching the trend of plant-based protein and which strategies do you evaluate as most promising?

Cooperation between Startup and incumbent firms is a good strategy, since the product (Beyond Meat) is already there, and current suppliers may need too much time to develop a similar product. Big Firms like McDonalds don't necessarily have the expertise or competence to do it themselves. Speed is very important and vital in the market; Cooperation allows for a fast adaptation of new products.

In the literature, a number of success factors such as the internal organization, internal processes, recourses and autonomy from the core business are mentioned, which are described as essential for the success of adapting to disruptive Innovation. Do you see these factors as success factors in this case as well and which other factors do you consider important?

Companies like McDonalds will ask themselves: 1. Will plant-based protein products generate incremental sales? // 2. Do we need to introduce these products in order to retain our existing customer base with the same frequency that they were coming to us before?

Depends on the objective they are trying to achieve but they will set up the right metrics and protocols to address those needs.

At the same time, the literature mentions factors such as the core customer base, the high risk and the current market size that are responsible for the failure to adapt to a disruptor. Do you agree with these factors and what other factors do you believe negatively affect the adjustment to plant-based protein?

Companies like McDonalds need to see the market potential and demand of plant-based proteins, if they do not see it, they won't move into the market nor make major investments. Therefore, the customer base can influence the decision-making concerning adaptation of new products, but this also depends on the individual company

How much influence has the customer base in the strategy planning?

In general, the customer base has a big influence, but it also depends on the individual company. McDonalds is catering to a lot of groups: Heavy users, families, occasional user, etc. hence it

won't ever only look at one core customer group. Burger King & Five Guys are narrower in their positioning and will focus stronger on that one segment or customer base

McDonalds caters to families and since families are an important part of the business, they will also be looking at the family side, not just heavy users. Quick Restaurant Services like McDonalds need to do Business and they never want to lose the indulgence part thus taste is very important. Plant-based burgers will be just as important if their taste is rewarding and fulfilling, making them attractive to regular customers.

Which advantages/disadvantages do you see in: Acquisition of startups, Internal Product Development, Venture Arm Investments and Cooperation Deals?

Cooperation: McDonalds Cooperation with Beyond is a wise decision, they don't have the expertise to do it themselves, they could challenge their supply chain to do it, it takes ages though, partnering is more in line with the speed of the market as you can't wait 5 years for a supplier to set up production and develop the product. Partnerships challenge the existing supply chain to watch out and keep up their game. Partnerships can be permanent solutions, depends on their delivery on quality, quantities and competitive prices

Currently Joao Lopes does not see the risk that McDonalds could become too dependent from a supplier like Beyond Meat, because there is enough room for plant-based products.

Acquisition: Don't have to invest in R&D, product is there and proven, go-to market can be done immediately, However this is not going to happen for McDonalds because they don't manufacture the products that they sell, but their suppliers may be tempted to do that to catch up in the market and stay in the game.

In general, all strategies always have a risk of failure and it depends on the specific case or company in order to say which strategy fits best.

Do you see startups having an advantage over incumbent firms?

They have the First-Mover Advantage. They are there and were very smart how they worked the market, Beyond Meat for example has a retail arm and build an allegiance with customer to retailer and not necessarily to restaurant brands. Now the branded restaurants have to go for a product that is already available in retail which is quite different from the way these big brands would introduce their products (Burgers). Moreover, startups like Beyond Meat and Impossible

Foods specifically target Flexitarians which is most likely a factor of their success. In addition, it was very smart of Beyond Meat to place its products right next to the real meat products. Usually you find these products in a special corner in the supermarket, but Beyond Meats strategy weakens the hard line between the products. (Physically and Psychologically).

What is the First Mover Advantage in Plant-based Protein? Is it sustainable for startups/incumbents?

First Mover Advantage is being a name in the market. Nevertheless, the biggest food suppliers in the world have enormous financial resources to invest in R&D and therefore the potential to come up with good products, but they need to see that the market is attractive enough

Are incumbent firms being pushed/forced into the plant-based market by startups?

Not forced, McDonalds is carefully testing these products and evaluates the market, had/has vegetarian options before in local markets

What can incumbent firms learn from startups?

Being bold is worth it (Taking risks): Startups have recognized the trend and were the first ones to move. They kept on improving their products and did not rest on their laurels

It was very smart that they tried to get the same taste as real meat, because before that the companies tried to convince people of a product that neither tasted nor looked like meat. They succeed because they try to make it look and taste like real meat.

Appendix 2: Interview Gerrit Suhlmann (ATKearney)

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

Perceived as a long-term trend by all participants along the entire value chain in the food industry. Consumers want alternatives to meat and want to live a more sustainable life in general. Especially Generation Y & Z show these attitudes and values. In the medium to long term these generations will rise to the middle class with high purchasing power.

Moreover, Plant-based protein has a better conversion rate than animal meat and it is better for the environment. Technically, it's also better because you need less input for the same output, so ultimately, it's better from the cost side as well.

What do you see happening within the market landscape? How will the food industry change within the short, medium and longer term? // From your experience how are food companies responding to changing market dynamics in the food industry?

Several suppliers/ companies enter the market and try to assert their role. At the moment the startups are particularly strong and are pushing their agenda. In the medium term, large companies will launch their own brands on the market or buy up other brands. These will then be marketed under their own label. The supply of alternative proteins in the supermarket will increase and take up more shelf space if the turnover fits.

There will always be meat products, but there will be a trend towards organic and premium quality. Processed Meat will be more strongly replaced by plant-based meat while fresh meat will rather not be replaced as it is more difficult to imitate steak.

In the long run, it is important how companies manage to reduce the cost of plant-based meat. There is plenty of potential, but it will be the art of how to do it and whether it will be with legumes (Peas) or soy and wheat proteins since they are cheaper. Legume supplier are overwhelmed with demand at the moment and can therefore impose higher prices. The big companies won't be as sustainable as Beyond Meat. For them it is important that the product tastes good, has a good price, is convenient and healthy.

The question is how suitable for the mass market it is to rely only on legumes and certain ingredients. In the long term, yes, but not in the medium term, because legume production is currently unable to keep up with the demand. The production has to change first and that takes time. In the short and medium term, wheat and soy are more interesting and is also intensively looked at by companies.

Furthermore, plant-based protein brings new players into the market, that before never had any connection to the meat or dairy market (Legume Supplier)

To what extent do they need to develop new strategies to retain competitive advantage in the face of this macro trend?

Nestlé and Unilever already have a large market dominance, good distribution networks and therefore a good opportunity to introduce products quickly and scale them up, however it is important for them to do what is suitable for the mass market. For large companies it is more important that the costs come down, while Startups like Beyond Meat looks more at the consumers. Large companies tend to focus on good taste with a price suitable for the mass market and position themselves accordingly. These are major factors over which the intensive competition for shelf space is often fought.

In the long term, they should build up a portfolio of animal protein alternatives and diversify their activities. Some companies are already going in the plant-based direction but have the problem to get the structure and taste of the product right. The last few percent to get a good product in terms of texture and taste proves to be more difficult than expected. 90% can be done by any company, but the last 10% are the reason many companies fail.

Smaller companies do a better job in the development, also because they are more specialized. This is why the question arises whether the large companies should buy these firms and then scale their production up to speed through their know-how and experience.

Plant-based protein products are difficult to protect through patents and the base of the product is relatively easy to produce (except for the last 10%). Every market player is following a slightly different strategy (Brands, Retail, Supplier)

In the literature, a number of success factors such as the internal organization, internal processes, recourses and autonomy from the core business are mentioned, which are described as essential for the success of adapting to disruptive Innovation. Do you see these factors as success factors in this case as well and which other factors do you consider important?

Creating a startup within a company can work but it takes enormous effort, since you also need the right constellation of talent, expertise etc.

Building a business unit would be easier. This unit could then collaborate with an aroma producer (There are 4 producers in the market and as they are only interested in big orders, only the big food companies would be able to work with them for individual products)

At the same time, the literature mentions factors such as the core customer base, the high risk and the current market size that are responsible for the failure to adapt to a disruptor. Do you agree with these factors and what other factors do you believe negatively affect the adjustment to plant-based protein?

It is still a fairly recent trend and some companies find it difficult to assess its sustainability and potential. They are dealing with uncertainty: There is the question of price and whether the company would manage to reduce costs. There is the risk and uncertainty whether other companies would manage this better, so that the company gets into a bad position and its return suffers. Moreover, setting up or converting production takes a lot of time, since a business plan must be developed, and financing must be secured. In addition, there is risk of time delay: e.g. being one of the last ones to enter the market may be a problem. Sometime companies even doubt their own competence and do not want to launch a product until it is perfect (Company Mentality). In addition, besides plant-based protein, lab grown meat is a potential disruption as well and it is difficult to predict which disruptor will be the strongest.

How much influence has the customer base in the strategy planning?

A lot and companies become somewhat captured by their customer base, however in this specific case this factor does not have too much influence. They need to produce a product that speaks to a broad mass. Consumers are changing and it just needs a little bit of time for that process.

Which advantages/disadvantages do you see in: Acquisition of startups, Internal Product Development, Venture Arm Investments and Cooperation Deals?

Acquisition:

Firms can buy knowledge and a working organization. It is a combination of knowledge and experience. Get the best of both worlds. Interesting for an incumbent firm to buy a startup that is able to deliver on the last 10%. However, there is the risk of clash of cultures, since big firms struggle to integrate startups into their organization. Internal culture of startup should not be destroyed or completely replace by the firm. Furthermore, the production systems need to be adjusted: Automation and process stability for solid quality (Difficult for startups)

Corporate Venture Arm

Positive argument is that you invest in a company and if it doesn't work out, you've only put money in the sand. You don't have the problem of having a company integrated. No integration measures had to be done like establishing interfaces. However, you have limited access to the know-how, strategy and direction of the startup. In general, a strategy for more conservative companies that are still unsure about the trend: Invest money that's left and when it's gone, it's no big deal. If you believe in it, you rather develop it internally or acquire another company to have full control.

Do you see startups having an advantage over incumbent firms? // What is the First Mover Advantage in Plant-based Protein? Is it sustainable for startups/incumbents?

Startups have an advantage in the sense that they have the momentum on their side. They have the opportunity to build strong brands, however they are building promises that speak to a specific target group and not the whole market. Because of that they stay in a higher cost structure from which it is difficult to get out. Accordingly, they have to set higher prices and argue those prices through e.g. quality.

Incumbent Firms can score with a lower cost structure and therefore lower prices which is important if the plant-based trend is supposed to be sustainable and for the long term. They also don't have such specific brand promises as they are selling to the mass market. Incumbent Firms also have their distribution networks which is a huge advantage. Especially for the B2B market which offers the opportunity to sell much more mass, incumbent firms are in the beneficial position. Unlike startups they have operative stability thus being able to guarantee no fluctuations in quality. The market will be big enough for multiple players and it is unlikely that Beyond Meat will capture it all (Example: Red bull: Other brands are still able to enter the market and find their niche).

Are incumbent firms being pushed/forced into the plant-based market by startups?

They are not being pushed into the market. The startups showed them that it is a big market and that people are demanding these products. Startups disclosed the business opportunity to them.

What can incumbent firms learn from startups?

They can learn from their Entrepreneurial Thinking/Spirit.

Appendix 3: Interview Zak Weston (GFI/Good Food Institute)

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

Long-term Trend: Fundamental shift in consumption patterns: Consumers want to reduce their meat intake and their awareness about sustainability topics increases. Products are marketed to flexitarian people; they don't have to sacrifice on taste and flavor. Millennials and Gen Z are big plant-based protein supporters and their generation plus the ones to come will boost plant-based even more in the future.

Plant-based protein are also attractive from the Business perspective: You have complete control over the production process, it is more sustainable, cheaper with economies of scale, fewer external risks such as disease outbreaks or antibiotic resistance, one can produce plant meat in a matter of hours which is a big improvement from the current system that takes several months, there is a lower price and supply volatility, production can happen closer to urban areas, it is more profitable because you don't need to grow a whole animal for a few profitable parts.

What do you see happening within the market landscape? How will the food industry change and within the short, medium and longer term?

Investments and Marketing of plant-based products is increasing throughout the industry. Plant-based protein is probably going to capture a significant market share. There are multiple developments: Blended protein (Animal + Plant) could possibly also capture a significant market share. // Cultivated meat which could also take over if it overcomes its obstacles.

In general, the meat industry's evolution went from a Local to Centralized model. The prediction of the future evolution is that meat will become an abstract category of protein, e.g. there will be a protein section in the grocery store, restaurants etc. It won't be that much important where it comes from (animal, plant) but its nutritional facts.

How are food companies responding to changing market dynamics in the food industry?

Most of the animal protein companies are investing into the market very rapidly (Quote Tyson: If we could produce protein without the animal – why wouldn't we?) They want to become a leader in alternative protein. Investments and acquisitions are expected to continue and increase. Especially the launch of new products by incumbent (meat) companies.

Overall, they make all the moves you would expect them to do to not get disrupted, which is why he is impressed with incumbent firms and how much effort they put into it.

To what extent do you need to develop new strategies to retain competitive advantage in the face of this macro trend?

Animal agriculture won't go away or dry out overnight, major change will take decades, henceforth they don't necessarily need to completely change their business model at this point. In the long-term though there is going to be a shakeout with winners and losers which is why companies need to invest in plant-based protein or at least hedge some risk to come out alive from the shakeout. It is the prediction that meat will become an indulgence product, so that people will eat less of it, but meat will be a premium product with a premium quality.

How can you tap into a new market that is in contradiction with your current core customer base?

The vast majority of the plant-based protein eaters are the same customer base (meat eaters). There is a risk in the sense of the quality of the products. If it is a poor product people are less likely to try another product in that category. In addition, there will always be people that never eat it, but this problem occurs with every type of product: "Companies don't always need 100% of people, 90% is enough".

What kind of strategy do you follow for approaching the trend of plant-based protein and which strategies do you evaluate as most promising?

In general, Acquisition of startups and Investments (Hedge risk) are a good strategy for incumbent firms. The internal development can be a good strategy too, but products should be of very good quality as consumers that try it out and are not happy with it are more likely to never try a product from that category again.

Strategy for more conservative companies is to invest in blended proteins (Meat & Plant in one product). Large food companies have arrived at the place where they are and have managed to grow to their current size because they have listened to the consumer. They don't move that much faster than the consumer and they can change at the pace of the consumer. They are very conscious about the consumer and stick to where the consumers are at. It is important not to rush into the market and launch every type of plant-based meat, because this approach is not

going to work. Work strategically instead, at a pace the company is comfortable with and the consumers too.

Key Takeout: If you don't invest and move into the plant-based protein direction, you'll be left behind and forced to fight for a different kind of market share than you ever had before.

At the same time, the literature mentions factors such as the core customer base, the high risk and the current market size that are responsible for the failure to adapt to a disruptor. Do you agree with these factors and what other factors do you believe negatively affect the adjustment?

Mr. Weston references the Innovator's Dilemma theory: Plant-based protein is a new technology; more so a hybrid of multiple analytical frameworks Christensen posits.

The Internal organization is a further factor, companies make a lot of money working in the animal agriculture space and it is really hard when you have a very well working cash cow to focus on a technology that is younger, less mature and challenging. Day-to-Day is so profitable that it is hard to refocus.

How much influence has the customer base in the strategy planning?

Customer base has a lot of influence, you could say that some of them were or are captured by their customer base and therefore weren't the first ones to move into the market.

Another major influence is the Meat industry itself which can be characterized as: Male dominated, old economy, old school type of industry that has for decades thrived on being about connections and relationships (Good old boys club feeling). Moreover, change averts Buyers (grocery, food service, food accounts), they know the meat business and are comfortable with it. They know that consumers are interested in trying new things like plant-based, but they are stuck in their ways and don't introduce these products into their buying lists. Hence, big purchasers are a major reason why many food firms continue to focus on their day-today business.

Nonetheless the industry is changing, e.g. diversity is increasing. The current system has been ruthlessly optimized for animal meat, from production and supply chain to business, policy, government information and data. It takes time for alternative protein to be at a similar level of

optimization and breaking the current chains of animal meat, that's why it is hard for companies to immediately embrace the trend.

Which advantages/disadvantages do you see in: Acquisition of startups, Internal Product Development, Venture Arm Investments and Cooperation Deals?

Acquisition: Firms can acquire trust & acquire a brand in which consumers have more space; Big food companies have burned a lot of trust in the recent years. They can harness innovation they have not been able to match from a scientific or marketing standpoint.

Disadvantage: Firms have to pay a really high price, which also has a high multiple on revenue. In comparison to other strategies it is the most expensive kind of investment.

Venture Arm: Good strategy to hedge some risk and to keep up with what's going on today in the industry. Acquisition is better though because then you get the full knowledge of that company, but even getting only some insight is already extremely valuable.

Internal Product Development: Comparatively cheap, but it is hard to predict which product works and finds demand, sometimes quite hard to overhaul your R&D, your talent, labor and infrastructure because you work with new materials, ingredients and new equipment. Furthermore, it is going to be associated with you and your brand, which may be difficult to pull off depending on your culture, infrastructure, talent pool, etc.

Do startups have an Advantage over the incumbent Firms?

In general, they are in a strong position, the startups have the power of their brands, they are trustworthy, have a positive image and had lots of buzz in the media. Basically, they are the face of plant-based protein. However, they have to scale up a lot in terms of production, Incumbent firms have the clear advantage in terms of scaling up production, supply chain and also marketing. There is also still a lot of R&D work to be done: shortening ingredients list, finding better ingredients, etc.

Were incumbent firms pushed into the market by the startups?

There is an urgency that has been brought up by the growth of the startups. There is a real sense of competition right now and the incumbent firms don't only see the startups as competition but also each other, since most of them are introducing products.

Shelf space is extremely valuable and expensive which is why lot of companies go quickly into the market to make sure they don't lose the shelf space.

What can incumbent Firms learn from the Startups?

They can learn that production technology and consumer taste have shifted and that it's the younger startups that take the risks and pursue the innovation.

Appendix 4: Interview Laurent Marcel (Danone Manifesto Ventures)

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

There is a deep consumer change underway, which is happening due to health and sustainability reasons. Consumers realize that the world can't be fed the way it used to, considering that the population will grow to 10 billion people. It generates big pressure on the food system, since it can't do it solely through animal protein (Greenhouse gases, land use, etc.). There is also an increasing awareness about a balanced and healthier diet. Consumers won't stop consuming animal protein, but more people will evolve to become flexitarians. Hence, plant-based protein is accelerating throughout markets. Animal agriculture business relayed a lot on Standardization as it decreased prices which ultimately helped the industry to grow. However, Standardization in the animal agriculture is reaching its limits which is why the development is going back to a more divers diet.

What do you see happening within the market landscape? How will the food industry change within the short, medium and longer term?

Lots of innovation and Entrepreneurs entering the space/market. The innovation comes from large groups and young companies. In general, the Food & Beverage market changed a lot during the last year. It used to be dominated by big groups like Danone. Over the last 20 years a very dynamic ecosystem of food tech and entrepreneurs emerged. This led to a diversification of the market players. Where food players are going now is very much a function of consumers expectations. The consumers ask for more options. Plant-based dairy is very dynamic space with lots of innovation. Overall, the Future of Food is Flexitarian.

How are you at Danone responding to changing market dynamics in the food industry?

The company is keeping a close eye to market developments and trends. Not long ago the Danone dairy division renamed itself: “Essential dairy and plant-based products”. Looking at supermarkets the Danone Dairy and Plant-based products are next to each other in the shelves and not divided. Shift from being a market leader in yoghurts segment to being the leader in dairy and plant-based yoghurts. Furthermore, the company makes investments into new startups

What kind of strategy do you follow for approaching the trend of plant-based protein and which strategies do you evaluate as most promising?

They follow several approaches simultaneously. They bought WhiteWave, a leader in plant-based dairy products in 2016. They develop new products internally and have the Venture Arm to look at new developments in the market.

Would you say that plant-based products are in contradiction with your core customer base?

They are not in contradiction. Consumers are evolving into Flexitarians which is why they want both types of products.

To what extent do you need to develop new strategies to retain competitive advantage in the face of this macro trend?

A lot at Danone starts with the consumers. Starting point for Danone was the recognition of a consumer shift towards more flexitarian diets. WhiteWave had a high-quality portfolio and was very complementary to Danone’s portfolio. The rationale behind this acquisition was to say we see something coming in front of us that is different and competitive or complementary to the Danone portfolio: You have to strategic options to answer: Either you refuse the change and hold to your position and fight against it. Otherwise, you accept that it is not a trend but a change. It is the better approach to embrace the change and make it part of your portfolio. Danone has a stronger portfolio now having a diversified offer as it also matches a broader audience.

How do you organize plant-based and animal-based internally?

If you have a global division, you can still in some markets allow some of the business to keep a form of independence. They follow a market by market approach.

Groups like Danone are designed to scale products and to scale operations. There are important manufacturing and distribution synergies in combining the divisions. At Danone they don't see consumers in silos (Dairy / Plant-based), but in a much more nuanced way. The mainstream consumers are aware of the impact of their food choices on the planet. Therefore, they are making more conscious choices. They have a very diversified spectrum of consumers: By having an integrated organization you can make choices that cater to all of them.

Even from a brand's point of view things have changed: More and more established brands are going into plant-based protein (Activa). The hard line between dairy and plant-based brands is dissolving.

Reasons why Danone might be slower in adapting its strategy?

The approach that large groups don't innovate anymore, and innovation only comes from startups is a shortcut and not true. Largest part of growth at Danone comes from Innovation. Nonetheless, startups have the advantage to go fast to market, because they have less established processes, shorter decision processes and smaller teams. Plus, the energy and ambition to go quick to the market, which is a reflection of their relatively young age and culture.

At large groups there is a lot at stake. Besides, the big groups work on big brands, which is why change takes more time. Young companies are willing to try, test, fail and do it all over again. Startups are willing to take bigger risks. They operate at different scale and different levels. When you walk on a narrow path, if you do it 5m above the ground, the risk is lower than if you walk on exactly the same path but at 100m. This does not mean, big firms don't innovate, they just do things differently.

In general, there is a growing appetite from the consumers and again, at Danone everything starts with the consumer. They like to have the choice between the big brands that they already know and the young brands that bring something new. Consumers love food and there are more interested in it than ever before which is why they want more options to choose from. For Danone it is a great opportunity to reinvent itself. Danone is positive about this change.

When we speak about innovation: People think that innovation is launching a new brand Groups very strong at scaling and nurturing big brands. When big brands launch a new product, people think it is just a simple extension. Startups come with a new brand and a completely new story, which has an influence on everything. You have to accept the fact that startups growth faster because they work at a different scale and speed.

What is the goal of your Corporate Venture Arm?

There are two main goals. On the one hand Danone is interested to make investments with the objective to acquire companies. The Venture Arm is a full front explorer for Danone that explores potential future brands or categories that could complement the Danone portfolio. The 2nd objective is to learn. Thereby, they are making investments in companies that disrupt the food sector by different usage of technology but not necessarily with an ambition to acquire them at some point. It is the ambition to bring new ideas and business models into Danone. Overall, they try to find a balanced strategy: Investment to acquire and Investment to learn.

Some investments are very close to the core business (Halsa) and would complement the Danone portfolio very well and there are others that are further away from the core business but could have an impact on Danone in the future. (Farmers Fridge)

Do you see startups having an advantage over incumbent firms?

They are more likely to try new things. Not limited by their manufacturing because very often the co-manufacture so that they have the ability to say today I sell a biscuit and tomorrow a yoghurt, because I will manufacture from someone else. One attribute that they have is: Boldness. Startups and Incumbents have very complementary skills.

Appendix 5: Interview Emma Ignaszewski (Good Food Institute)

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

GFI looks at multiple metrics and the data is indicating that it is a long-term trend: Retail-sales data: As of July 2019, overall grocery sales had a 31% growth for plant-based products that directly replace animal products in the past two years and reached \$4.5 billion. Furthermore, 51% of Americans have purchased a plant-based protein product in the last three months. QSR sales of plant-based burgers increased by 10% and have 3.5% market share in total QSR burger sales. Data showed that these consumers also bought beef products which confirms that plant-based protein products speak to a wider customer base.

Furthermore plant-based protein has a much better conversion rate than traditional meat. You need to feed poultry 9 calories to get 1 calorie of meat. With plant-based meat you do not lose these calories and moreover you can form it into every desired part within hours. To get a steak, you need to grow cattle for several months.

What do you see happening within the market landscape? How will the food industry change and within the short, medium and longer term?

On a basic level the market is growing and has big growth projections for the future. The investments are increasing and an expansion in the formats and product types, that are widely available to the consumer, is happening. However, Plant-based protein has a big innovation potential such as the expansion into plant-based seafood. Cultivated meat has also great potential to further disrupt the meat industry.

How are food companies responding to changing market dynamics in the food industry?

Food and Meat companies are buying in the plant-based protein trend: Nestlé announced completely vegan cheeseburger, Unilever bought the Vegetarian Butchery, Tyson and Hormel launched new brands, etc.

All of the 6 Top meat companies in the United States are active and involved in plant-based meat. Popular were the launches the new brand from Tyson (Raised and Rooted), who wants to become global leader in alternative protein and Hormel Foods (Happy Little Plants Brand).

To what extent do you need to develop new strategies to retain competitive advantage in the face of this macro trend?

The meat industry is becoming the protein industry and the incumbent companies are embracing this development/change. The incumbent firms are very savvy in reframing from identifying as meat company to identifying as a protein company. They need to develop alternative protein strategies if they are going to stay in the protein business (Example Dairy: Non-dairy sales were 3x bigger than dairy sales). It is not just an addition, nor can it be neglected in their strategies.

How can you tap into a new market that is in contradiction with your current core customer base?

The plant-based food market is not in contradiction with the current core customer base of these companies (Data shows that core customer base is also customer for plant-based products). Primary food choices are based on: Taste, price and convenience. The plant-based companies build their products in response to these drivers. Basically, they are giving the consumer the same product, just in better ways.

What kind of strategy do you follow for approaching the trend of plant-based protein and which strategies do you evaluate as most promising?

It depends on the specific case and company. Each strategy has its pros and cons.

In the literature, a number of success factors such as the internal organization, internal processes, recourses and autonomy from the core business are mentioned, which are described as essential for the success of adapting to disruption. Do you also see these factors as success factors and which further factors do you evaluate as important?

No stand on specific success factors, because innovation factors apply regardless of the product. Animal and dairy industry exist despite how their products are produced, consumer value transparency and honesty. Hereby, plant-based protein has an advantage.

At the same time, the literature mentions factors such as the core customer base, the high risk and the current market size that are responsible for the failure to adapt to a disruptor. What other factors do you believe negatively affect the adjustment?

Current meat strategy is very profitable and predictable (People will always want meat), Industry is well-established and coordinated. Internal organization / culture does not want to change things or make risky decisions.

How much influence has the customer base in the strategy planning?

The customer base has a lot of influence on the strategy planning, but it is only one of many factors that influence the strategy planning.

Which advantages/disadvantages do you see in: Acquisition of startups, Internal Product Development and Venture Arm Investments?

In terms of acquiring a startup the advantage is that they can acquire the advantages of the startups which are trust, image, knowledge and innovations.

Regarding R&D firms need the internal competences to have a successful product development, and this can be hard for companies that never worked with alternative proteins before.

In general, a combination of multiple strategies can be very successful and looking at the market it is a commonly followed approach.

Do startups have an Advantage over the incumbent Firms?

The startups are the Innovator and have the positive image of the First Mover, which brings them Customer Loyalty and lots of Media Buzz. Incumbents have the better supply chain, customer knowledge, production facilities, capacity and distribution networks. The biggest bottleneck in plant-based protein is the production capacity. Startups struggle so far and incumbent firms have the clear advantage here due to their experience.

Were incumbent firms pushed into the market by the startups?

Big firms are brought into the market by the business opportunity and the opportunity was revealed by some of the startups. Thus, they were not pushed nor forced into the market.

What can incumbent Firms learn from the Startups?

Plant-based protein products can always be improved and bring out new iterations. Products can change with consumer taste and preferences, while animal protein always stays at the same level.

Appendix 6: Nora Bartha-Hecking (Nestlé Germany)

The veggie segment is growing rapidly. The so-called vegetarian semi-finished dishes segment has recorded growth of 33 percent this year, with a turnover of more than 186 million euros in the first ten months alone. For comparison: In 2018, growth was eight percent and total sales 169 million euros. New technologies and the resulting new products are creating dynamics in the refrigerated shelves. The extremely positive growth in this category is mainly due to the new generation of meat substitutes that consumers can prepare fresh. The new plant-based meat knows no compromise: in appearance, taste and preparation, the new Veggie meat is similar to its animal counterpart. This fires up the veggie market.

Retailers and consumers were in a vegan fever this year – accordingly the topic also drove food manufacturers to innovate. Today, only around eight percent of Germans are vegetarians or vegans. Nevertheless, there is great potential for the veggie segment. The current changes in our society play a major role in this. In times of growing environmental awareness, many people are looking for climate-friendly alternatives that they can integrate into their everyday lives - be it in terms of behavior, transport or consumption. Although they appreciate the consistency and taste experience of meat, around 60 percent of German consumers want to reduce their meat consumption - for environmental, health or animal welfare reasons. Plant-based meat alternatives offer a solution without sacrificing the meat experience which makes it easier to switch to veggie.

We therefore expect the veggie trend to continue and even intensify. In our view, convenience and quick preparation will play an increasingly important role in the future. At the same time, consumers will attach even greater importance to a balanced, healthy and varied diet.

There are currently various suppliers who bring vegan meat alternatives onto the market - from retailers and start-ups to "classic" food manufacturers. We are pleased that the veggie segment is enjoying an increasing relevance. The growing attention is having a positive effect on this category: The quality of the products continues to improve, and the broader range also contributes to the growth of the segment.

In the veggie segment, Nestlé is present with the Garden Gourmet brand and relies on its own expertise in research and product development. Garden Gourmet has a long tradition in the Nestlé portfolio and has stood for vegetarian and vegan products since its founding. The brand has its roots in Israel, where it was founded in 1985 by members of a kibbutz. The traditional cuisine of the Levant and Middle East, with a clear focus on vegetable dishes, has since influenced Garden Gourmet's completely meat-free range. Nestlé had already participated in the brand in the 1990s. Garden Gourmet products have been available on the German market for over 20 years.

2019 was also a positive year for Garden Gourmet. The brand launched the completely vegetable meat alternative products Incredible Burger and Incredible Hack. The products are the result of collaboration between Nestlé food technicians, scientists and chefs at the international level.

Nestlé is working hard to further expand the area of plant based alternative products. We expect vegan products such as Garden Gourmet Incredible Burger to develop into a billion-dollar market worldwide. Therefore, we will continue to develop more products that have a better environmental impact and can contribute to a balanced diet. In 2020, for example, Nestlé will be the first food company to offer the three most important ingredients of a completely vegan "bacon cheeseburger" from a single source.

Appendix 7: Evaluation Criteria (FAIRR)

Materiality	Strategy	Product Expansion	Consumer Engagement	Tracking & Reporting	Investor Engagement
<ul style="list-style-type: none"> Company acknowledges high animal protein exposure as material business risk and board level support for portfolio transition Company has completed scenario analysis, and has developed a clear understanding of climate risk impacts on protein sourcing 	<ul style="list-style-type: none"> Company has time-bound commitment(s) in place to transition multiple categories to more sustainable product choices Percentagebased absolute emission or Science-based target on Scope 3 	Company demonstrates evidence on: <ul style="list-style-type: none"> Resourcing in R&D and/ or cross-sectoral collaborations Product reformulation across categories Expanded product portfolio 	Company demonstrates evidence on: <ul style="list-style-type: none"> Product promotions and marketing initiatives to encourage plant-based consumption Merchandising plant-based products adjacent to conventional categories 	<ul style="list-style-type: none"> Company discloses formal metrics to track protein exposure and Scope 3 emissions in annual public reporting 	<ul style="list-style-type: none"> Company engages with the investor coalition on this issue

(FAIRR, 2019)

Appendix 8: Interview Questionnaire Guideline

Assessment of Plant-based Protein

How do you assess the Plant-based Protein disruption? Do you see it as a temporary trend or as a fundamental game changer?

What do you see happening within the market landscape? How will the food industry change and within the short, medium and longer term?

Strategy of Incumbent Firms

How are you responding to changing market dynamics in the food industry?

To what extent do you need to develop new strategies to retain competitive advantage in the face of this macro trend?

How can you tap into a new market that is in contradiction with your current core customer base?

What kind of strategy do you follow for approaching the trend of plant-based protein and which strategies do you evaluate as most promising?

Success & Failure Determinants of Strategy Adjustment

In the literature, a number of success factors such as the internal organization, internal processes, recourses and autonomy from the core business are mentioned, which are described as essential for the success of adapting to disruption. Do you also see these factors as success factors and which further factors do you evaluate as important?

At the same time, the literature mentions factors such as the core customer base, the high risk and the current market size that are responsible for the failure to adapt to a disruptor. Do you agree with these factors and what other factors do you believe negatively affect the adjustment?

How much influence has the customer base in the strategy planning?

Advantages & Disadvantages of Strategies

Which advantages/disadvantages do you see in: Acquisition of startups, Internal Product Development, Venture Arm Investments and Cooperation Deals?

Startups vs. Incumbent Firm

Do you see startups having an advantage over [your company/Unilever]?

What is the First Mover Advantage in Plant-based Protein? Is it sustainable for startups/incumbents?

Is your and other incumbent firms being pushed/forced into the plant-based market by startups?

What can incumbent firms learn from startups?