



Affilié à l'Université de Montréal

RÉPONSES STRATÉGIQUES À LA STIGMATISATION :
Étude de cas multiple sur les entreprises « *The Big Six* » de l'industrie semencière et agrochimique mondiale

STRATEGIC RESPONSES TO STIGMA:
Multiple Case Study of *the Big Six firms* in the Global Seed and Agrochemical Industry

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RÉSUMÉ

Objectifs : Ma thèse examine la réponse stratégique des entreprises multinationales œuvrant dans des industries stigmatisées. Les industries stigmatisées font face à des enjeux de légitimité qui peuvent menacer leur survie. Comprendre leur comportement face aux menaces associées au stigma peut permettre une meilleure compréhension de la stratégie en situation d'adversité. La question de recherche spécifique explorée dans ce mémoire peut être résumée ainsi: comment l'exposition au stigma affecte-t-elle la réponse stratégique des firmes ? Les stratégies à l'étude incluent : l'évitement, la dilution de la stigmatisation, l'opposition, la manipulation et la déstigmatisation.

Méthodologie : Ce mémoire prend la forme d'une étude de cas comparant le comportement de diverses firmes de l'industrie mondiale des semences et de l'agrochimie. Les entreprises à l'étude sont celles du « Big Six » : BASF, Bayer, Dow, DuPont, Monsanto et Syngenta. Ces firmes ont été choisies afin d'examiner l'effet du degré de stigmatisation au siège de l'entreprise, ainsi que les effets de l'appartenance d'une entreprise à une seule catégorie (activités seulement dans les industries stigmatisées) ou à des catégories multiples (activités à la fois dans les industries stigmatisées et non stigmatisées) dans la détermination des stratégies utilisées pour répondre à la stigmatisation. Les cas sélectionnés couvrent la période allant de 2000 à 2015. Les données utilisées comprennent les lettres du comité exécutif des entreprises s'adressant aux actionnaires, des rapports annuels, des rapports corporatifs de responsabilité sociale, des rapports annuels intégrés ainsi que dans des déclarations (formulaire 10-K et 20-F du SEC), pour un total environ 33 000 pages de documents d'archives. Le devis de l'étude consiste en une analyse de données narratives et tabulaires de chaque cas suivi d'une synthèse croisée.

Résultats : L'analyse du comportement du « Big Six » a permis l'élaboration du « Modèle d'exposition-réponse à la stigmatisation », un modèle expliquant la relation entre l'exposition à la stigmatisation et la stratégie correspondante utilisée par les entreprises pour gérer cette stigmatisation. Mon analyse révèle que les entreprises ayant le plus haut niveau d'exposition à la stigmatisation utilisent des mécanismes de gestion actifs et s'engagent dans des stratégies faisant la promotion d'une industrie légitime. Ces stratégies de gestion incluent l'opposition, la manipulation de la stigmatisation et la déstigmatisation. De plus, ces entreprises s'engagent dans des actions visant à protéger l'industrie mondiale des semences et de l'agrochimie. D'autre part, les entreprises ayant le plus faible niveau d'exposition à la stigmatisation utilisent des stratégies de gestion de la stigmatisation plus passives comme des stratégies de légitimation propres à leur entreprise. Par conséquent, ces entreprises s'engagent davantage dans des stratégies d'évitement et de dilution de la stigmatisation, et ainsi, ne sont pas aussi actives dans la promotion de la déstigmatisation à l'échelle de l'industrie mondiale des semences et de l'agrochimie.

Limites : L'étude comprend quatre principales limites. La plus importante limite est que seuls des documents d'archives secondaires ont été utilisés pour l'analyse. La seconde limite concerne la généralisabilité réduite de l'étude, étant donné la nature contextuelle du devis d'une étude de cas. La troisième limite de mon étude comporte un biais de déclaration, puisque mes données proviennent de rapports exécutifs d'entreprises. Finalement, ma recherche pourrait également être sujette à une interprétation biaisée involontairement.

Implications pour la pratique : Les résultats de cette étude pourront être utilisés par les gestionnaires des entreprises œuvrant au sein d'industries controversées afin d'obtenir une compréhension éclairée de la manière dont eux-mêmes et leurs concurrents répondent à la stigmatisation ainsi que la manière dont ils devraient y répondre. Une compréhension approfondie de leur propre réponse face à la stigmatisation et la manière dont celle-ci diffère de la réponse de

leurs concurrents peut aider les gestionnaires à réorienter ou modifier leurs stratégies de gestion de la stigmatisation de manière plus éclairée, leur permettant ainsi de devancer leurs concurrents.

Implications pour la théorie : J'ai développé le « Modèle d'exposition-réponse à la stigmatisation » qui explique la relation entre l'exposition à la stigmatisation et la stratégie correspondante utilisée par les entreprises pour répondre à cette stigmatisation. Ce modèle est fondé sur la documentation disponible sur les stratégies utilisées pour faire face aux pressions institutionnelles de Olivier (1991), ainsi que sur la documentation portant sur la stigmatisation organisationnelle de Tracey et Phillips (2016); Hampel et Tracey (2016); Vergne (2012); Hsu (2006); Hudson et Okhuysen (2009); Reinmoeller et Ansari (2016); Devers, Dewett et coll. (2009); Durand et Vergne (2014); Piazza et Perretti (2015) et Hudson (2008).

Originalité : Jusqu'à présent, les recherches effectuées dans le domaine de la stigmatisation organisationnelle se sont intéressées à la gestion plutôt qu'à la réduction de la stigmatisation. Mon étude répond donc à l'appel lancé par Roulet (2015), Hudson et Okhuysen (2009), Helms et Patterson (2014), Mishina et Devers (2012), et Devers, Dewett et coll. (2009) qui soutient l'importance d'examiner les stratégies de réduction de la stigmatisation. De plus, mon étude est complémentaire aux recherches existantes puisqu'elle fait le lien entre l'exposition à la stigmatisation et les stratégies utilisées par les entreprises en vue de promouvoir le passage d'une industrie stigmatisée à une industrie plus légitime. Finalement, à ma connaissance, aucune étude antérieure n'a examiné l'évolution des stratégies de gestion de la stigmatisation à travers le temps.

Mots-clés : stigmatisation organisationnelle, stigmatisation de l'industrie, industrie mondiale des semences et de l'agrochimie, étude de cas.

ABSTRACT

Objective: My thesis examines the strategic responses of multinational enterprises working in stigmatized industries. Stigmatized industries face challenges of legitimacy that can threaten their survival. Understanding their behavior against threats associated with stigma can provide a better understanding of their strategy in a situation of adversity. The specific research question under investigation is as follows: *How does exposure to stigma affect strategic response to stigma?* The strategies under investigation include: avoidance, dilution, defiance, manipulation and destigmatization.

Methodology: This paper takes the form of a case study comparing the behavior of various firms in the global seed and agrochemical industry. The companies under investigation include the *Big Six* firms: BASF, Bayer, Dow, DuPont, Monsanto and Syngenta. These firms were chosen in order to examine the affect of the stigma at global headquarters location, as well as the affects of single category membership (activities only in stigmatized industries) or membership in multiple categories (activities in both stigmatized and non-stigmatized industries) in determining the strategies used to respond to stigma. The selected cases cover the period from 2000 to 2015. The data used include letters to shareholders, annual reports, corporate social responsibility reports, integrated annual reports, as well as Form 10-K and 20-F SEC filings, for a total of approximately 33,000 pages of archival material. The study involves an in-depth multiple case study analysis with both narrative and tabular data from each case followed by a cross-case synthesis.

Results: Analysis of the behavior of the *Big Six* firms resulted in the development of the “*Exposure-Response Model to Stigma*,” a model explaining the relationship between exposure to stigma and the corresponding strategy used by firms to manage this stigma. My analysis reveals that companies with the highest level of exposure to stigma use active management mechanisms and engage in strategies that promote a legitimate industry. These management strategies include opposition, manipulation of stigma and destigmatization. In addition, these companies are taking action to protect the global seed and agrochemical industry. On the other hand, firms with the lowest level of exposure to stigma use more passive stigma management strategies as well as legitimation strategies specific to their company. As a result, these companies are becoming more involved in stigma avoidance and dilution strategies and are thus not as active in promoting destigmatization across the global seed and agrochemical industry.

Limitations: My study experiences four main limitations. The greatest limitation involves the use of solely secondary archival data. The second limitation involves the fact that case studies are subject to limitations of limited generalizability because of the highly context-specific nature of the study. The third limitation involves the fact that my study is prone to reporting bias due my data revolving around the reporting of firm executives. Lastly, my research could also be subject to an unintentionally biased interpretation.

Practical Implications: Managers of firms in controversial industries can use this research in order to gain a conscious understanding of how they respond to stigma, how they should respond to stigma, as well as how their competitors respond to stigma. Understanding these responses and how they differ from their competitors’ responses in a conscious way can help managers realign or change their strategy in a more deliberate way by being one step ahead of their competitors.

Theoretical Implications: I develop the “*Stigma Exposure-Response Model*,” which is a model depicting the relationship between exposure to stigma, and the corresponding strategy used to

deal with the stigma. This model builds from existing literature on strategic responses to institutional pressures by Oliver (1991) as well as the findings from organizational stigma literature from Tracey and Phillips (2016); Hampel and Tracey (2016); Vergne (2012); Hsu (2006); Hudson and Okhuysen (2009); Reinmoeller and Ansari (2016); Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) and Hudson (2008).

Originality: Previous research in the realm of organizational stigma looks at coping with organizational stigma instead of trying to improve it or reduce it. Thus, my research responds to the call by Roulet (2015), Hudson and Okhuysen (2009), Helms and Patterson (2014), Mishina and Devers (2012), and Devers, Dewett et al. (2009). This study extends prior research by making a link between exposure of stigma experienced and strategies used to move an industry from stigmatization to legitimacy. Furthermore, to my knowledge, no previous study has looked at the evolution of organizational stigma strategic responses over time.

Keywords: Organizational Stigma, Industry Stigma, Global Seed and Agrochemical Industry, Case Study Analysis.

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LISTE DES SIGLES ET ABRÉVIATION UTILISÉES/LIST OF ABBREVIATIONS AND ACRONYMS USED

Abbreviation Original Term

AAAS	American Association for the Advancement of Science
AAI	American Antitrust Institute
ABCA	Agricultural Biotechnology Council of Australia
ACS	American Cancer Society
ADS	American Depositary Receipt
AG	Aktiengesellschaft
AMJ	Academy of Management Journal
AMSAP	Advanced Maize Seed Adoption Program
ANS	Alliance for Natural Health
AP	Adventitious Presence
APAC	Asian Pacific
ATSDR	Agency for Toxic Substances & Disease Registry
BCS	Bayer CropScience
CAGR	Compound Annual Growth Rate
CDC	Center for Disease Control
CNS	Central Nervous System
CSR	Corporate Social Responsibility
DARK	Denying Americans the Right to Know
DAX	Deutscher Aktienindex (German Stock Exchange)
DJIA	Dow Jones Industrial Average
DJUSCH	Dow Jones Chemicals Index
DNA	Deoxyribonucleic Acid
EC	European Commission
ECHO	European Civil Protection and Humanitarian Aid Operations
ECPA	European Crop Protection Association
EDGAR	Electronic Data Gathering, Analysis and Retrieval System
EFSA	European Food Safety Authority
EMBO	European Molecular Biology Organization
EP	European Parliament
EPA	Environmental Protection Agency
ERS	Economic Research Service
EU	European Union
FAO	Food and Agriculture Organization
FTSE	Financial Times Stock Exchange
FY	Fiscal Year
GEO	Genetically Engineered Organism
GEP	Genetically Engineered Plants
GM	Genetically Modified
GMC	Genetically Modified Crops
GMM	Genetically Modified Microorganisms
GMO	Genetically Modified Organisms
GMP	Genetically Modified Plants
GR	Growth Regulators
GRAS	Generally Recognized as Safe
GRI	Global Reporting Initiative

HHI	Herfindahl-Hirschman Index
HQ	Headquarters
IARC	International Agency for Research on Cancer
IFIC	International Food Information Council
IMF	International Monetary Fund
INRA	International Research Associates
IPR	Intellectual Property Rights
ISAAA	International Service for the Acquisition of Agri-Biotech Applications
IVA	Industrieverband Agrar
JV	Joint Venture
LATAM	Latin America
LIFE	Leadership, Integrity, Flexibility and Efficiency
LLC	Limited Liability Company
LLP	Low Level Presence
LMO	Living Modified Organisms
LTS	Letters to Shareholders
MMA	Mixed Martial Arts
MNE	Multinational Enterprise
MSCI	Morgan Stanley Capital International
NA	Not Available
NAFTA	North American Free Trade Area
NASDAQ	National Association of Securities Dealers Automated Quotations Systems
NSCEP	National Service Center for Environmental Publications
NGO	Non-governmental Organization
NYSE	New York Stock Exchange
OTC	Over the Counter Market
PCB	Poly Chlorinated Biphenyl
PGR	Plant Growth Regulators
PMI	Philip Morris International
R&D	Research & Development
RNAi	RNA interference
RTP	Research Triangle Park
S&P	Standard & Poor
S&T	Science and Technology
SE	Societas Europaea
SEC	United States Securities and Exchange Commission
SMO	Social Movement Organization
SOE	State-Owned Enterprise
UCC	Union Carbide Corporation
UN-DECA	United Nations Department of Economic and Social Affairs
US	United States
USDA	United States Department of Agriculture
VA	United States Department of Veteran Affairs
WTP	Willingness to Pay

GLOSSAIRE/GLOSSARY

Adventitious Presence	Adventitious presence or “low level presence” refers to the unintentional and incidental commingling of trace amounts of one type of seed, grain or food product with another. This includes foreign matter or grain from other traded crops, and it is normally managed by agreeing on quality standards and monitoring. When used in relation to plant biotechnology, the term refers to the incidental presence of biotech-derived material in food, feed or grain at levels that are consistent with generally accepted agricultural and manufacturing practices” (CropLife).
Agricultural Biotechnology	Agricultural Biotechnology is a range of tools, including traditional breeding techniques that alter living organisms, or parts of organisms, to make or modify products; improve plants or animals; or develop microorganisms for specific agricultural uses. Modern biotechnology today includes the tools of genetic engineering (USDA).
Agrochemical	Any chemical used in agriculture, including chemical fertilizers, herbicides, and insecticides (Britannica, 2017).
Agronomy	A branch of agriculture dealing with field-crop production and soil management (Merriam-Webster, 2017b).
Fungicides	A fungicide is a specific type of pesticide that controls fungal disease by specifically inhibiting or killing the fungus causing the disease (McGrath, 2016).
Genetic engineering	Manipulation of an organism’s genes by introducing, eliminating or rearranging specific genes using the methods of modern molecular biology, particularly those techniques referred to as recombinant DNA techniques (USDA, 2017).
Genetically engineered organism (GEO)	An organism produced through genetic engineering (USDA).
Genetic modification	The production of heritable improvements in plants or animals for specific uses, via either genetic engineering or other more traditional methods. Some countries other than the U.S. use this term to refer specifically to genetic engineering (USDA).
Genetically modified organism (GMO)	An organism produced through genetic modification (USDA).
Herbicide-tolerant crops	Crops that have been developed to survive application(s) of particular herbicides by the incorporation of certain gene(s) either through genetic engineering or traditional breeding methods. The genes allow the herbicides to be applied to the crop to provide effective weed control without damaging the crop itself (USDA).

Herbicides	A class of pesticide, specialty crop chemicals used for the control of weeds (Cornell, n. d.).
Insecticides	A class of pesticide, specialty crop protection chemicals used for the control of insects (Cornell, n. d.).
Insect-Resistant Crops	Plants with the ability to withstand, deter or repel insects and thereby prevent them from feeding on the plant. The traits (genes) determining resistance may be selected by plant breeders through cross-pollination with other varieties of this crop or through the introduction of novel genes such as Bt genes through genetic engineering (USDA).
Pest-Resistant Crops	Plants with the ability to withstand, deter or repel pests and thereby prevent them from damaging the plants. Plant pests may include insects, nematodes, fungi, viruses, bacteria, weeds, and other (USDA).
Recombinant DNA	Genetically engineered DNA usually incorporating DNA from more than one species of organism (Merriam-Webster, 2017u).

CHAPITRE 1/CHAPTER 1 INTRODUCTION

“The GMO issue is something that continues to be brought up in an unprompted way in our interviews with consumers [...] And when we look at things like fat, sodium and sugar, GMO is showing the strongest growth rate in terms of a characteristic that consumers are trying to avoid [...] It’s connected to this idea that a product is processed [...] Consumers have a vision in their minds of people in lab coats taking syringes and injecting things into a product, a vision of food made in a lab—and that’s even worse in their minds than food coming off a factory line.”

Laurie Demeritt

Chief Executive Officer, Hartman Group
(Strom, Nov 20 2015)

1.1 Phenomenon of Study

What do tobacco, gambling (Jo & Na, 2012), nuclear energy, weapons (Hong & Kacperczyk, 2009), GMOs¹ (Ellen & Bone, Spring 2008), adult entertainment (Cai, Jo et al., 2012; Lindgreen, Maon et al., 2012), pornography (Reast, Maon et al., 2013), and the business of cadavers for medical research (Anteby, 2010) have in common? They are industries that trigger stigma. My thesis investigates how international firms strategically respond to stigma and how the level of exposure to stigma impacts their choice of strategic response.

Stigma is a phenomenon directly stemming from Goffman’s² work in the field of sociology (Piazza & Perretti, 2015) and therefore was not originally applied to organizational literature. Stigma is usually discussed in the social realm, as a negative label given to individuals and as: “[...] the process by which the reaction of others ‘spoils’ normal identity” (Nettleton, 2006, p. 95). In recent years, the conceptualization of stigma in the field of organizational literature has emerged from Devers, Dewett et al. (2009), and has been rapidly increasing in popularity (Devers, Dewett et al., 2009; Hudson & Okhuysen, 2014; Link & Phelan, 2001; Piazza & Perretti, 2015). Research in the organizational stigma domain is needed as existing organizational research has overlooked organizations that: “[...] do not have broad-based social approval or legitimacy (Hudson & Okhuysen, 2009)” (Zuckerman, 1999, p. 1399). Thus, the actions that international firms undertake in the face of stigma are not well grasped nor examined in the literature (Piazza & Perretti, 2015). My thesis bridges this gap.

¹ For the purpose of my thesis, genetically modified crops (GMCs), genetically engineered plants (GEPs), genetically modified plants (GMPs), genetically modified organisms (GMOs), genetically modified (GM) foods, genetically engineered organisms (GEOs), genetically modified microorganisms (GMMs) and genetically modified (GM) technology will be used interchangeably.

² Erving Goffman (1922-1982) was a Canadian born sociologist and pioneer of micro-sociological theory (Crossman, Mar 2, 2017).

For the purpose of my thesis, two definitions of organizational stigma are used. The first used by Vergne (2012, p. 1028) defines stigma as: “a vilifying label (Devers, Dewett et al., 2009) that contaminates a group of similar peers (Jonsson, Greve et al., 2009; Pontikes, Negro et al., 2010).” The second is from Devers, Dewett et al. (2009, p. 155) and describes stigma as: “a label that evokes a collective stakeholder group-specific perception that an organization possesses a fundamental, deep-seated flaw that deindividuates and discredits the organization.” Industries that evoke these feelings can also be referred to as sin industries (Cai, Jo et al., 2012; Grougiou, Dedoulis et al., 2016), sin stocks (Hoium, May 20 2015), contested industries (Durand & Vergne, 2014), controversial industries (Cai, Jo et al., 2012), vice³ industries (Matthews, Mar 24 2016), dirty industries⁴ (Adams, 2012), immoral industries (Epstein, Oct 30, 2013) and tainted industries (Durand & Vergne, 2014).

Industries, like people, come in all shapes and sizes. Some are respected and well-received by the public (Durand & Vergne, 2014), while others experience stigma. Despite these differences, all industries regardless of whether or not they possess wholesome moral objectives or purity can experience success. In other words, pure moral objectives are not a precondition for success. On the contrary, international firms in stigmatized industries, or even criminal industries (Hudson & Okhuysen, 2009, p. 150) are capable of generating a lot of wealth (Durand & Vergne, 2014; Hoium, May 20 2015), and some of the most profitable industries are in fact stigmatized (Matthews, Mar 24 2016). In 2014, alcohol was the largest stigmatized industry in the world with global sales estimated at \$1.2 trillion, tobacco was second with sales of \$528 billion, followed by military at \$400 billion, illicit drugs at \$320 billion, and gambling casino revenue at \$278 billion (Matthews, Mar 24 2016). My thesis examines the global seed and agrochemical industry⁵, a controversial industry characterized by polarized debates (Alesci, Apr 18, 2016) fear, misconceptions (Entine, Dec 23 2016), and non-harmonized regulatory frameworks (Ludlow, Smyth et al., 2013, p. 212). In 2016, the global crop protection market⁶ was worth \$73.5 billion and the global commercial seed market was worth \$45 billion (ISAAA, Aug 2016). Together, these two sub-industries make up the global seed and agrochemical industry.

³ Vice is defined as a “moral depravity or corruption” (Merriam-Webster, 2017aa).

⁴ For the purpose of my thesis, sin industries, sin stocks, immoral industries, vice industries, contested industries, controversial industries, dirty industries and tainted industries are interchangeable.

⁵ This industry is also known as the agrichemicals industry (Lawrence, Oct 2 2016); agrochemicals industry (Stevenson, Jul 18 2003); agricultural chemical, pesticide and fertilizer industry (EPA-NSCEP, 2000), genetically modified food industry; crop protection technology industry (CropLife, 2017); plant science industry (CropLife, 2017); plant biotechnology industry (Hunter, Jun 2011); green biotechnology (Oakley, 2005).

⁶ The global crop protection market includes agrochemicals.

Stigmatized industries, often provoke discussions based on emotions rather than facts (Lallanilla, Jan 11 2016). As an example, certain people may react to pornography with shock, and disgust (Laville, Jun 15 2016), while others may see it as a valuable tool to improve their sex life (Royalle, Nov 11 2012). In a similar way, GM foods also provoke strong emotions (Malyska, Bolla et al., 2016), as some regard GMOs as unnatural and dangerous (Clancy, 2016) while other see it as an important technology to help solve world hunger around the globe (Worrall, Apr 22 2015). Wherever one stands on these issues, they are both driven on emotions rather than scientific facts (Lallanilla, Jan 11 2016). Issues involving: “cultural, social and personal” issues such as sex and food evoke strong feelings (Mayes, Jun 26 2014). These industries beg the question: “just because we can, does it mean we should?” (Plumer, Jun 30 2016). Just because we can produce, distribute and consume pornography, does it mean we should? Just because we can produce, distribute and consume GMOs, does it mean we should? These issues involve looking at scientific facts but emotions play a strong role in people’s opinions. What costs and benefits do people experience from these industries? Do the benefits outweigh the costs? Issues such as these are not based purely on what is right or wrong, or on science, but instead these debates are ethically based and driven by the values people hold (Plumer, Jun 30 2016).

Despite the prosperity stigmatized industries can experience, research has still shown that having social support from stakeholders (Vergne, 2012), and achieving social legitimacy (Dacin, 1997; Deephouse, 1996; Hudson & Okhuysen, 2009; Meyer & Rowan, 1977) is important for firm success. Therefore, even though stigmatized industries can experience financial success, stigma is a negative label which can impact both individuals within the firm, and organizations as a whole in harmful ways (Hudson & Okhuysen, 2014). More specifically, stigma can result in social and economic sanctions (Sutton & Callahan, 1987), stakeholder misidentification (Elsbach & Bhattacharya, 2001; Piazza & Perretti, 2015), as well as the ability of the firm to attract investors, “build stable alliances” or to foster and maintain loyalty with their customers (Vergne, 2012, p. 1027). In addition, according to Grougiou, Dedoulis et al. (2016, p. 906), firms operating in stigmatized industries encounter: “[...] considerable hostility (Hudson, 2008) which may take the form of restrictive legislation (Janofsky, Aug 10 2005) and/or adverse social activism (Banerjee & Bonnefous, 2011; Bansal & Clelland, 2004; Devers, Dewett et al., 2009; Galvin, Ventresca et al., 2005; Haniffa & Cooke, 2005).”

When an industry experiences stigma from society, the level of stigma exposure each firm within the stigmatized industry experiences differs (Durand & Vergne, 2014; Vergne, 2012). This is true for the following reasons: first, the level of stigma in regards to a particular industry can

differ for social and cultural reasons. As previously discussed, perception of what is and is not controversial differs based on cultural beliefs and value judgments (Becker & Arnold, 1986). An industry stigmatized in one part of the world, may not be equally stigmatized in other parts of the world. Stigma is a social and cultural construct (Becker & Arnold, 1986), and therefore, cultural differences have an impact on people's perceptions about what should or should not be stigmatized. For instance, research has shown that Europeans have a less negative perception of pornography (Hudson, 2008) but a more negative perception of GMOs when compared to Americans (Wunderlich & Gatto, 2015, p. 845).

Secondly, the level of stigma exposure experienced by international firms operating in a stigmatized industry differs as a result of their membership in other industries in addition to the stigmatized one (Vergne, 2012). In other words, industry-level stigma and firm-level organizational stigma are different (Vergne, 2012). For example, a clinic that specializes in abortions face more stigma than a clinic that simply offers abortion services but specializes in other procedures. This phenomenon is known as the dilution effect, category straddling (Vergne, 2012), and the migration strategy (Hudson, 2008).

Past research in organizational stigma literature has focused on strategies that have been described as superficial (Piazza & Perretti, 2015). Moreover, past research has looked at firm disengagement⁷ from a stigmatized industry as a method of coping with stigma. However, as mentioned by Hudson and Okhuysen (2009) and Piazza and Perretti (2015), for firms which operate in a single stigmatized industry, disengagement is not an option as this would force the firm to shut down and cease operations. Therefore, firm disengagement is not a viable option for firms operating in solely one stigmatized sector. This begs the question: what do firms do in the face of stigma?

1.2 Research Context and Question

Drawing on literature from organizational stigma and institutional theory, my thesis examines the strategic responses that international firms undertake in response to stigma. How do firms respond to this label? Do they avoid the hostile audiences⁸? Do they attempt to dilute the

⁷ Disengagement is described as: "to release or detach oneself" (Merriam-Webster, 2017j).

⁸ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuysen (2009), Tracey and Phillips (2016) and Vergne (2012).

stigma they face? Do they try and manipulate perceptions? Do they defy perceptions? Do they engage in industry destigmatization⁹ behaviors?

My thesis examines the strategic responses to stigma in the global seed and agrochemical industry, also known as the industry for genetically modified organisms (GMOs) or genetically modified (GM) foods. In 1996, 4.3 million hectares¹⁰ of biotechnology crops were planted around the world (ISAAA, May 2017). By 2016, that number grew to 185.1 million hectares (ISAAA, May 2017). The global seed and agrochemical sector is significant and the market is growing at a fast rate around the globe (ISAAA, May 2017).

Despite this rapidly growing industry, consumer perception and regulatory regimes differ significantly between Europe¹¹ and the U.S. (Anderson & Jackson, 2003). The industry stirs up much political controversy due to polarization (Alesci, Apr 18, 2016) of opinions and positions on both ends of the spectrum (Cuite, Sep 21, 2015). Are GMOs a miracle that help provide a dire need of feeding a growing world population, or is this technology the root of evil? Advocates of the sector argue that GMOs could help increase agricultural productivity (FAO, 2003b); provide benefits to the environment (FAO, 2003b); provide benefits to human health (FAO, 2003b); help bring farmers out of poverty (FAO, 2003b), and help preserve water (Caselli-Michael, Feb 23, 2016). These benefits are due to GMO products exhibiting the following traits: pest resistance, herbicide tolerance, disease resistance, cold temperature tolerance, drought tolerance/sanitary tolerance, enhanced nutrition, pharmaceuticals and phytoremediation¹² (Whitman, Apr 2000). Other benefits of GMOs include producing healthier fruits and vegetables that also taste better (Jabr, Jan 23 2014). Moreover, proponents claim that GM technology is a sophistication of traditional breeding techniques that have been used since the beginning of mankind and that farmers have always looked for ways in which they can improve the features of their crops (Cowan, Jun 18, 2011).

In contrast, opponents claim GMO products can have negative effects on the environment, on human and animal health, as well as creating negative socio-economic effects on farmers and society (FAO, 2003a). Many non-governmental organizations (NGOs) such as Greenpeace, are

⁹ Destigmatization is defined as: “to eradicate a stigma in the eyes of a hostile audience” (Hampel & Tracey, 2016, p. 39).

¹⁰ A hectare is a unit of measurement for an area, representing 10,000 square meters, or 2.471 acres.

¹¹ For the purpose of my thesis, Europe firms, European firms and E.U. firms will be used interchangeably.

¹² Phytoremediation technology “uses wild or genetically modified plants (GMPs) to extract a wide range of heavy metals and organic pollutants from the soil” (Pouke & Rennenberg, Jun 2005).

strong opponents of GM technology. Greenpeace has dubbed GM foods, “Frankenfood¹³” (Lomborg, Jul 14 2016). Another concern raised by opponents is the use of glyphosate¹⁴ in popular GMO products, an ingredient in Monsanto’s famous “Roundup¹⁵.” The International Agency for Research on Cancer (IARC) has recently classified glyphosate as probably carcinogenic¹⁶ to humans (Group 2A)¹⁷ (IARC, Mar 20 2015).

The differences in public opinion of genetically modified foods have been extensively researched in the past. However, current research has not taken a historical view of the progression of strategic responses to stigma in this industry nor has the level of exposure to stigma affects choices of strategic response to industry stigma been examined. My thesis addresses these gaps.

In 2005, researchers at the University of Maastricht found that “the more unnatural a genetically modified product seemed, the less likely it would be to gain acceptance” (Konnikova, Aug 8 2013). This phenomenon was explained in 1982 by psychologist Robert Sternberg who found that “the natural is what we find more familiar, while what we consider unnatural tends to be more novel—perceptually and experientially unfamiliar—and complex, meaning that more cognitive effort is required to understand it. The natural is seen as inherently positive; the unnatural is not” (Konnikova, Aug 8 2013). A very large division in public opinion of GMOs is seen in the U.S. and Europe (Hebden, Shin et al., 2005). The U.S. has a much more favorable position on GMOs than Europeans (Runge, Bagnara et al., 2001). According to Runge, Bagnara et al. (2001, p. 222), Europe has differed from the U.S. in terms of public opinion due to differences in “political, economic, and cultural characteristics.”

Since the early 2000s, the global seed and agrochemical industry has undergone immense consolidation (Moss, 2016). Today, the Big Six international firms dominate the industry

¹³ A Frankenfood is a slang term for food that's been genetically modified.

¹⁴ Glyphosate is “a systemic organophosphate herbicide used to control herbaceous and woody weeds especially on croplands”(Merriam-Webster, 2017n).

¹⁵ Roundup is a popular herbicide, with glyphosate being a key ingredient (Yan, Jun 29, 2017).

¹⁶ Substances and exposures that can lead to cancer are called carcinogens (ACS, Nov 3 2016).

¹⁷ “The IARC Working Group’s classification of glyphosate as “probably carcinogenic to humans” (Group 2A) is based on “limited” evidence of cancer in humans (from real-world exposures that actually occurred) and “sufficient” evidence of cancer in experimental animals (from studies of “pure” glyphosate). This classification is further supported by “strong” evidence for genotoxicity, both for “pure” glyphosate and for glyphosate formulations. The IARC Monographs evaluation is a hazard classification. It indicates the strength of evidence that glyphosate can cause cancer” (IARC, Mar 1 2016, p. 3).

(Moss, 2016). These Big Six international firms include: BASF, Bayer, Dow Chemical¹⁸, DuPont, Monsanto and Syngenta (Moss, 2016). This industry is a relevant example of an industry experiencing organizational stigma due to four important reasons.

First, it is an industry that has a “policy and technological landscape [that] is changing rapidly” (Cuite, Sep 21, 2015) and is therefore relevant to international business scholars and managers. Secondly, it is an industry that has and continues to cause significant divisions between proponents and opponents. Thirdly, this sector sets the perfect stage to investigate the role of category membership and the role of level of stigma at global headquarters location in strategic responses to stigma. This is because two of the Big Six operate solely in one stigmatized sector (i.e. the global seed and agrochemical industry), and the other four international firms are diversified in other chemical businesses. Finally, the industry is characterized by three of the largest six firms located in the U.S. (an area of relatively lower stigma), and the other three located in the European Union (an area of relatively higher stigma). This allows for the investigation of four different types of firms: diversified or multiple category membership firms with global headquarters located in Europe; diversified or multiple category membership firms with global headquarters located in U.S.; non-diversified or single category membership firms with global headquarters located in Europe; and last, non-diversified or single category membership firms with global headquarters located in United States.

My thesis looks specifically at the global seed and agrochemical industry to examine how international firms experiencing stigma respond to being given this denigrating label and how this differs based on the level of exposure to stigma. More specifically, I examine categorical¹⁹ stigma, which has been described as the ways in which groups of firms can be categorized in similar ways and simultaneously become targets due to their membership in a particular category of firms (Vergne, 2012). Stigmatized categories are defined as: “groups of organizations, such as arms or tobacco producers, whose liability prompts out-group members to keep their distance to avoid a potentially harmful association” (Vergne, 2012, p. 1030). For this reason, an investigation of the differences in strategic responses to sigma for diversified and non-diversified international firms headquartered in the U.S. or Europe offers a perfect setting to examine organizational stigma. For the aforementioned reasons, the Big Six firms in the global seed and agrochemical industry offers the perfect setting to examine organizational stigma.

¹⁸ Henceforth, Dow Chemical will be referred to as “Dow.”

¹⁹ For the purpose of my thesis, categorical stigma and organizational stigma are synonymous.

My thesis also looks at strategy in order to analyze how firms respond to organizational stigma. Firm disengagement from the stigmatized industry is not examined in my thesis, but instead looks at the ways in which these companies have responded to stigma while remaining in the industry. My research builds on Piazza and Perretti (2015, p. 725), who proposed that: “[...] an organization’s reaction to categorical stigma will be a function of the intensity of disapproval targeting the category, the exposure of the stigmatized category in the media, and the focal organization’s level of membership in the category.” Furthermore, categorical stigma is not about targeting one individual firm, but rather, it is about the entirety of all firms with membership in a particular category (Piazza & Perretti, 2015, p. 725).

Despite the challenges these companies face, the GMO industry is prospering. How is this so? How do the firms in this industry strategically respond to stigma in order to survive and thrive? According to Durand and Vergne (2014), findings from research in the impression management domain that stem from studies on uncontested industries cannot be generalized to stigmatized sectors. Therefore, my research does not look at classic impression management or corporate social responsibility literature. My research is one of the few which looks at corporate strategies used by stigmatized firms. It is therefore a fruitful area for research. For these reasons, the grouping of firms into quadrants is conducted for analysis.

1.3 Overview of Methodology

My research methodology involves an in-depth multiple case study analysis of archival data. More specifically, I use annual reports, corporate social responsibility (CSR) reports, integrated reports²⁰, as well as the Forms 10-K²¹ and 20-F²² reports filed with the U.S. Securities and Exchange Commission (SEC), for the Big Six firms in the global seed and agrochemical industry from 2000 to 2015. This involves an in-depth examination of approximately 33,000 pages of archival data.

1.4 Expected Contribution

My contribution is as follows: I shed light on different strategies of responding to organizational stigma in the context of a multinational enterprise (MNE), and the factors which impact the choice in strategy. I look at how international firms in the global seed and agrochemical

²⁰ Integrated reporting involves both annual reports and CSR reporting integrated into one report.

²¹ Regulatory filing requirement for U.S. domestic issuers listed on a U.S. stock exchange for the SEC.

²² Regulatory filing requirement for U.S. foreign issuers listed on a U.S. stock exchange for the SEC.

sector have addressed stigma over time and how diversified international firms²³ operating as general chemical companies with operations in the global seed and agrochemical industry differ from non-diversified²⁴ international firms that solely operate as global seed and agrochemical firms. Moreover, I examine how these responses differ for firms with global headquarters located in Europe²⁵ (area of higher stigma²⁶), vs. the U.S. (area of lower stigma²⁷).

Today, the global seed and agrochemical industry has six main competitors (Moss, 2016). These firms are either located in the U.S. or Europe. This is important because U.S. consumers are more accepting of GM technologies than European consumers, meaning that firms located in Europe have higher stigma at the headquarters, and conversely, firms with their headquarters located in the U.S. have lower stigma at headquarters. My research question is: ***How does exposure to stigma affect strategic response to stigma?***

My thesis expands on literature from institutional theory and organizational stigma literature by building on the strategic responses to institutional processes put forth by Oliver (1991) and incorporating these responses with literature on strategic responses to stigma. My thesis builds on is the literature by Tracey and Phillips (2016); Hampel and Tracey (2016); Vergne (2012); Hsu (2006); Durand and Vergne (2014); Hudson and Okhuysen (2009); Reinmoeller and Ansari (2016); Devers, Dewett et al. (2009); Piazza and Perretti (2015) and Hudson (2008). The purpose of my thesis is to build theory and increase understanding of how the global seed and agrochemical firms respond to organizational stigma and how exposure to stigma affects choice of strategic response.

1.5 Structure of Thesis

My thesis is structured in the following way:

- (1) In the second chapter, the literature review with a description of the relevant theories related to organizational stigma and strategic responses to organizational stigma is presented.
- (2) In the third chapter, the methodological approach is presented.

²³ For the purpose of my thesis, diversified firms are synonymous with multiple category membership firms and will be used interchangeably.

²⁴ For the purpose of my thesis, non-diversified firms are synonymous with single category membership firms and will be used interchangeably.

²⁵ Firms located in Europe, European firms, firms with global headquarters located in Europe, firms with global headquarters located at an area of higher stigma will be used interchangeably.

²⁶ Europe is an area of higher stigma in the context of GMO stigma.

²⁷ U.S. is an area of lower stigma in the context of GMO stigma.

- (3) In the fourth chapter, an in-depth examination of each of the six cases is presented.
- (4) In the fifth chapter, cross-case synthesis and theoretical model is presented.
- (5) The last chapter consists of a discussion where the theoretical and practical implications and conclusion are presented.

CHAPITRE 2/CHAPTER 2

REVUE DE LITTÉRATURE/LITERATURE REVIEW

“Stigma is a process by which the reaction of others spoils normal identity.”

Erving Goffman
American Sociologist
(Goffman, 1990, p. 3)

This chapter describes the emergent field of organizational stigma. My literature review begins with a discussion on the early conceptualization of stigma²⁸ as described by Goffman (1963b) in the field of sociology (Paetzold, Dipboye et al., 2008). I then elaborate on the difference between individual and organizational stigma along with the positive and negative aspects of organizational stigma. Then, I discuss strategic responses to stigma and look at the literature on strategic responses to institutional pressures. My chapter ends with the literature gaps which my thesis addresses.

2.1 Organizational Stigma

2.1.1 Early Conceptualization of Stigma

The study of stigma originates from the field of social psychology and sociology, where it has undergone extensive examination (Paetzold, Dipboye et al., 2008). The conceptualization of stigma originates from the sociological realm, from sociologist Ervin Goffman from 1963²⁹ (Paetzold, Dipboye et al., 2008). In his seminal literature (Smailes & Street, 2011), he defines stigma as: “an attribute that is deeply discrediting,” and describes three different types of stigma (Goffman, 2009, p. 3). These include: (1) physical abominations (2) character blemishes, and (3) tribal identities (Goffman, 2009, p. 4). He first defines physical abominations as those: “[...] of the body—the various legal deformities” (Goffman, 2009, p. 4). He describes character blemishes as involving people who are judged as having a: “[...] weak will, domineering or unnatural passions, treacherous and rigid beliefs, and dishonesty, these being inferred from a known record of, for example mental disorder, imprisonment, addiction, alcoholism, homosexuality, unemployment, suicidal attempts and radical political behavior” (Goffman, 2009, p. 4). Lastly, the third type he describes is tribal stigma, which is related to: “race, nation, and religion” (Goffman, 2009, p. 4). Goffman (2009) describes tribal stigma as one that can be passed down a family’s ancestry and that has the capability of spreading throughout the entire family.

²⁸ The everyday use of stigma refers to: “a mark of shame or discredit” (Merriam-Webster, 2017x).

²⁹ Goffman’s book entitled “Stigma: Notes on The Management of Spoiled Identity” published in 1963 was a seminal book in the stigma literature (Smailes & Street, 2011).

Another definition of stigma arises from Crocker and Major (1989, p. 609) and describes individuals whom experience stigma as those who:

[...] are members of a stigmatized or oppressed social category. By this, we mean social categories about which others hold negative attitudes, stereotypes, and beliefs, or which, on average, receive disproportionately poor interpersonal or economic outcomes relative to members of the society at large because of discrimination against members of the social category (Crocker & Major, 1989, p. 609).

A more recent definition of stigmatization comes from Paetzold, Dipboye et al. (2008, p. 186) who define stigma as: “[...] an attribute that produces a social identity that is devalued or derogated by persons within a particular culture at a particular point in time (Crocker, Major et al., 1998)”. All of the definitions of stigma, point to the fact that stigmatization³⁰ is a social process or phenomenon (Pozner, 2008a). In other words, Pozner (2008a) explains how the process of stigmatization emerges and is a social process that is built through social contact and interaction, whereby the process of interacting creates meanings which are attached to the behavior of certain categories of people (Berger & Luckmann, 1966 ; Elliott, Ziegler et al., 1982; Jones, Farina et al., 1984; Kurzban & Leary, 2001). The definitions presented above stem from literature defining stigma at the individual level. The following section looks at the difference between individual and organizational stigma.

2.1.2 Individual vs. Organizational Stigma

Individual and organizational stigma differ in multiple ways, such as; the types of stigmatizing conditions; the methods of stigma prevention and removability, and the pervasiveness of stigma (Devers, Dewett et al., 2009). See *Table 1: Comparison of Individual and Organizational Stigma*. These are now discussed in turn.

Types of Stigmatizing Conditions

A crucial difference between individual and organizational stigma described by Devers, Dewett et al. (2009, p. 158), is that the majority of organizational stigmas are “conduct stigmas,” which they explain to be: “based on the specific actions and choices of organizational members.” Illustrations used to explain conduct stigma include any actions which firms undertake that create stigma, including corporate scandals, restatements of earnings, as well as choice of industry in which they operate³¹ (Devers, Dewett et al., 2009). In other words, Devers, Dewett et al. (2009, p. 158) explain that certain characteristics of firms, such as their products, their geographic

³⁰ To stigmatize is “to describe or identify in opprobrious terms” (Merriam-Webster, 2017y).

³¹ Following this conceptualization of stigma, organizational stigma is assumed to be a conduct stigma.

markets and their policies and practices are due to managerial decisions, and therefore, are seen as arising from these firms in question (Devers, Dewett et al., 2009). This differs from individual stigma as individual stigma is not automatically seen as the responsibility of the individual (Devers, Dewett et al., 2009). For instance, one can be born with a birth defect, which is not the result of something an individual has done to deserve (Devers, Dewett et al., 2009). On the other hand, organizational stigma is seen largely differently, because organizations create their stigma (Devers, Dewett et al., 2009).

Tribal stigma in the realm of organizational stigma differs when compared to individual stigma. More precisely, tribal stigma³² at the organizational level refers to either the firms' activities in a specific industry and/or their activities in a particular geographic market (Devers, Dewett et al., 2009). See *Table 1: Comparison of Individual and Organizational Stigma*. Paetzold, Dipboye et al. (2008) describe tribal stigma at the organizational level as having markers. More precisely, Paetzold, Dipboye et al. (2008, p. 189) describe markers as those which:

[...] may include artifacts (e.g., the neon signs that advertise "erotic" massage parlors versus therapeutic massage centers), geographic locations (e.g., an organization's address in a low-rent, high-crime neighborhood), salient activities or performance (e.g., an organization that files for Chapter 11 bankruptcy³³), labels (e.g., a gay spa that calls itself a "bathhouse" versus a health and fitness center), and ratings or rankings (e.g., a corporation that has its bond rating reduced from A to B, or a business school whose ranking in a large-scale survey falls out of the "top twenty").

The next aspect discussed are the differences in prevention and removability between individual and organizational stigma.

Prevention and Removability

Another important distinction between individual and organizational stigma involves the prevention and removability of stigma (Devers, Dewett et al., 2009). Devers, Dewett et al. (2009) describe individual stigma as being harder to remove and prevent when compared to organizational stigmas, especially for tribal stigma and those which involve bodily dysmorphias³⁴. Organizational stigmas can be prevented, removed or diluted³⁵ (Devers, Dewett et al., 2009). The next item discussed are the differences in pervasiveness, or context-specificity of stigma between

³² My thesis looks at tribal stigma experienced by firms who experience tribal stigma due to their activities in a stigmatized industry, and firms who experience tribal stigma due to their activities in both a stigmatized industry and geographic location of global headquarters.

³³ Chapter 11 bankruptcy is also referred to a "reorganization" bankruptcy (U.S.Courts).

³⁴ Dysmorphism is defined as "an anatomical malformation" (Merriam-Webster, 2017k).

³⁵ More detailed descriptions of these strategies are discussed in section 2.18.

individual and organizational stigma.

Pervasiveness

Individual and organizational level stigma also differ in terms of context specificity³⁶ (Devers, Dewett et al., 2009). Organizational stigma is seen as a more context-specific phenomenon when compared with individual level stigma (Devers, Dewett et al., 2009). Devers, Dewett et al. (2009, p. 159), state that: “organizational-level labels and the stereotypes they evoke tend also to remain context specific, suggesting that organizations may be stigmatized in one context and not in others.” On the other hand, individual level stigmas are seen as less context-specific and more universal across different cultures (Devers, Dewett et al., 2009). See *Table 1: Comparison of Individual and Organizational Stigma* below.

Table 1: Comparison of Individual and Organizational Stigma

	Individual Stigma	Organizational Stigma
Types of Stigmatizing Conditions	Abomination of the body - E.g. physical deformities, illnesses Tribal Stigma - E.g. race, religion, gender Conduct Stigma - E.g. dishonesty, deviant behavior	Primarily conduct stigmas based on actions - E.g. bankruptcies, scandals, firm failure Some tribal stigmas based on presence in particular product or geographic markets. - E.g. “Made in China”
Prevention and Removability	- Prevention and removal is difficult - Conduct stigmas may be removed through successful complete identity change, but removal is rare and difficult - Tribal stigmas and “abominations of the body” are even more difficult to remove - Plastic surgery and/or medical treatment may remove the mark of some stigmas (e.g., disfigurements and illnesses)	Increased capacity to prevent, remove, or dilute through active removal of (Decoupling from) certain component (e.g., firings and divestitures)
Pervasiveness	Generally more pervasive across contexts	Generally context specific

Source: Devers, Dewett et al. (2009, p. 158)

The following section describes literature on stigmatization in organizational settings.

³⁶ The extent to which the presence of stigma is context-specific (Devers, Dewett et al., 2009).

2.1.3 Stigma in the Organizational Literature

As previously mentioned, in recent years organizational stigma has been increasing in importance in the organizational literature (Devers, Dewett et al., 2009; Link & Phelan, 2001; Piazza & Perretti, 2015; Roulet, 2015). Despite extensive research in the psychological and sociological domains, research on stigma in the organizational realm, has faced “relative neglect” by scholars (Paetzold, Dipboye et al., 2008, p. 186). Goffman’s conceptualization of individual level stigma has recently been extrapolated to organizational analysis (Devers, Dewett et al., 2009; Hampel & Tracey, 2016; Sutton & Callahan, 1987).

Organizational Stigma has been given multiple definitions in the literature over the years (Tracey & Phillips, 2016). According to Tracey and Phillips (2016, p. 741), despite the fact that numerous definitions have been put forth, most definitions share the common theme that: “[...] organizations are stigmatized when they become profoundly discredited in the eyes of one or more stakeholders.” In line with this, Devers, Dewett et al. (2009, p. 157) define organizational stigma as: “a collective stakeholder group-specific perception that an organization possesses a fundamental, deep-seated flaw that deindividuates and discredits the organization.” Similarly, Hampel and Tracey (2016, p. 3) describe an organization as stigmatized when: “salient audiences mark it out; publicly shame its conduct as highly inappropriate, and express strong moral disapproval of it (Devers, Dewett et al., 2009; Goffman, 1963b; Hudson, 2008).” The definitions described above all share similar characteristics in that stigma acts as a way of attaching a negative label to the organization and its operations.

The earliest research on stigma in organizations can be found by Hughes (1958) which brought attention to the fact that: “some tasks in organizations were physically, socially, or morally tainted” (Hudson & Okhuysen, 2009, p. 134). This early research was directed at occupational factors, also known as dirty work (Ashforth & Kreiner, 1999; Ashforth, Kreiner et al., 2007; Hudson & Okhuysen, 2009; Hughes, 1958; Kreiner, Ashforth et al., 2006; Tracy & Scott, 2006). Despite the stigmatization of certain professions, these professions are still necessary in society (Kreiner, Ashforth et al., 2006). For instance, garbage collectors are stigmatized but an essential service for society (Kreiner, Ashforth et al., 2006). The same can be said about embalmers, butlers, erotic dancers, telemarketers, and repossessors (Kreiner, Ashforth et al., 2006).

The early studies looked at occupations which were morally tainted and described three main types of occupational stigmatization. These include those which are physically tainted, socially tainted, and morally tainted (Ashforth & Kreiner, 1999; Goffman, 1963a; Hughes, 1958;

Hughes, Rohrer et al., 1951; Kreiner, Ashforth et al., 2006). See *Table 2: Occupational Stigmatization*. Occupations with physical taint are those described as: “Occupations associated with tangibly offensive things such as garbage or death or performed under highly noxious or dangerous conditions” (Kreiner, Ashforth et al., 2006, p. 620). Occupations with social taint are those described as: “Occupations involving regular contact with stigmatized populations or with servile relationships built into the social structure” (Kreiner, Ashforth et al., 2006, p. 620). Finally, occupations with moral taint are those described as: “Occupations that are regarded by a significant portion of society to be sinful or of dubious virtue or in which deceptive or intrusive methods are commonly used” (Kreiner, Ashforth et al., 2006, p. 620). These studies looked at how individuals dealt with having stigmatized occupations, without taking into account the strategic responses of organizations in stigmatized industries.

Table 2: Occupational Stigmatization

Type of Taint	Description	Examples
Physical Taint	“Occupations associated with tangibly offensive things such as garbage or death or performed under highly noxious or dangerous conditions” (Kreiner, Ashforth et al., 2006, p. 620).	Embalmers dealing with dead bodies, roofers, soldiers.
Social Taint	“Occupations involving regular contact with stigmatized populations or with servile relationships built into the social structure” (Kreiner, Ashforth et al., 2006, p. 620).	Prison guards’ association with convicts, chauffeur, butler.
Moral Taint	“Occupations that are regarded by a significant portion of society to be sinful or of dubious virtue or in which deceptive or intrusive methods are commonly used” (Kreiner, Ashforth et al., 2006, p. 620).	Erotic dancers, pawnbrokers, telemarketers, repossessors.

Source: Hughes, Rohrer et al. (1951) ; Hughes (1958); Goffman (1963a); Ashforth and Kreiner (1999); Kreiner, Ashforth et al. (2006, p. 620).

Organizational stigma is described as a gradual process in the literature (Devers, Dewett et al., 2009). More specifically, Carberry and King (2012, p. 1145) define the process of stigmatization as one which: “[...] begins with the judgment of organizational action as illegitimate by at least one stakeholder, followed by a subsequent judgment that the act is not idiosyncratic³⁷ but representative of a deeper misalignment between their values and those of the organization (Devers, Dewett et al., 2009)”. In other words, stigma does not emerge immediately, but rather progressively (Carberry & King, 2012).

³⁷ Idiosyncratic is defined as “a peculiarity of constitution or temperament: an individualizing characteristic or quality” (Merriam-Webster, 2017p).

Organizational stigma is an important area for research for various reasons. In addition to the aforementioned reasons, organizational stigma is an important area for research as it has recently been described by Paetzold, Dipboye et al. (2008, p. 187) as a “[...] natural component of sensemaking³⁸,” and therefore, deserves greater attention by scholars. This is due to the fact that it can help develop a greater understanding of: “[...] organizational phenomena, including leadership, teamwork, motivation, and inter-group relations” (Paetzold, Dipboye et al., 2008, p. 187). The following section describes literature on two types of organizational stigma: event-stigma vs. core-stigma.

2.1.4 Event-Stigma vs. Core-Stigma

Organizational stigma can be differentiated into two main types: event-stigma or core-stigma (Hudson, 2008). As the name suggests, event-stigma is triggered by an event (Hudson, 2008) and according to Tracey and Phillips (2016, p. 5) results from: “a singular anomalous³⁹ infraction (Hudson, 2008)”. Examples of event-stigma includes those: “related to some anomalous or episodic negative event (Hudson, 2008, p. 253)”, including events such as tree-spiking⁴⁰ (Elsbach & Sutton, 1992), bankruptcy (McKinley, Ponemon et al., 1996; Neu & Wright, 1992; Sutton & Callahan, 1987), industrial accidents (Hoffman, 1999; Hoffman & Ocasio, 2001; Hudson, 2008; Lacey, 2003), and product defects (Ginzel, Kramer et al., 1992; Hudson, 2008).

On the other hand, core-stigma arises from the core characteristics of the firm, such as their operations (Hudson, 2008). My thesis examines core-stigma. Stigmatized industries experience core-stigma because the source of the stigma is not triggered by one single event (Hudson, 2008). More precisely, according to Hudson (2008, p. 254), an organization experiences core-stigma when the: “evaluation held and often expressed by some social audience(s) that an organization or set of organizations is discounted, discredited, and/or tainted in some way owing to some core attribute or attributes.” Core-stigmatized organizations are also characterized as: “somehow suspect, untrustworthy, damaged, or otherwise ‘less than’ what acceptable

³⁸ The authors argue that “stigmatization results from sensemaking” (Paetzold, Dipboye et al., 2008, p. 189). Sensemaking is defined as “[...] the process through which people work to understand issues or events that are novel, ambiguous, confusing, or in some other way violate expectations” (Maitlis & Christianson, 2014, p. 57).

³⁹ Anomalous is defined as “inconsistent with or deviating from what is usual, normal, or expected” (Merriam-Webster).

⁴⁰ Tree spiking involves the use of “metal or ceramic spikes [that] are driven deep within trees for the purpose of damaging chain saws or blades at sawmills. Spiking has been credited with halting or delaying some U.S. Forest Service logging contracts, but it has also caused the serious injury of at least one sawmill worker” (Palmer).

organizations should be” (Hudson, 2008, p. 254). Similarly, according to Grougiou, Dedoulis et al. (2016, p. 2), core-stigmatized organizations are firms which are stigmatized based on: “their outputs, routines, actions and operations (Galvin, Ventresca et al., 2005; Hudson & Okhuysen, 2009; Vergne, 2012)”. Moreover, Hudson (2008, p. 257) describes the pressures that core-stigmatized organizations face as including various obstacles, such as critical stakeholders, political pressures, legal pressures, and other various forms of actions against the organization such as:

[...] boycotts, pickets, and demonstrations against the organization; letters to the editor in local newspapers or community magazines objecting to the organization; public speeches or sermons expressing disapproval or condemnation; and even more subtle ways, such as receiving a disapproving glance or derogatory remarks about the organization (Hudson, 2008, p. 257).

The following section describes stigmatized industries.

2.1.5 Stigmatized Industries

My thesis looks at organizational core-stigma arising from choice of industry. Examples of industries operating in stigmatized industries as described in the literature is shown in *Table 3: List of Stigmatized/Contested/Sin/Dirty/Vice Industries*⁴¹. According to Durand and Vergne (2014, p. 1207), these industries are described as those which: “have questionable societal impact or market them in a way deemed inappropriate by industry outsiders (Hudson, 2008)”. Durand and Vergne (2014) differentiate between stigmatized and contested industries by defining stigmatized industries as being merely a subcategory of contested industries (Galvin, Ventresca et al., 2004). More specifically, Durand and Vergne (2014, p. 1208) define stigmatized industries as being:

[...] characterized not only by social contestation and targeted scrutiny but also by the presence of a deeply discrediting attribute—stigma. As such, some industries are contested but not stigmatized, such as big box retailing (Yue, Rao et al., 2013) and big oil (Levy & Egan, 2003). That is, the oil industry may be contested because of specific events (e.g., an oil spill) but such contestation is bounded in time and space—oil companies are not believed to overly pollute all the time and everywhere they operate.

⁴¹ Research has distinguished the difference between stigmatized and contested industries (Durand & Vergne, 2014, p. 1208). However, for the purpose of my research, I will assume that they are synonymous. The subtle distinction is not relevant for my thesis.

Table 3: List of Stigmatized/Contested/Sin/Dirty/Vice Industries⁴²

Industry	Source
Tobacco	Durand and Vergne (2014); Grougiou, Dedoulis et al. (2016); Novak and Bilinski (Dec 2014); Jo and Na (2012).
Arms/Firearms	Durand and Vergne (2014); Grougiou, Dedoulis et al. (2016).
Cadavers for Medical Research	Anteby (2010).
Competitive Intelligence	Reinmoeller and Ansari (2016).
Gambling	Durand and Vergne (2014); Grougiou, Dedoulis et al. (2016); Novak and Bilinski (Dec 2014).
Oil and Gas	Cai, Jo et al. (2012); Lindgreen, Maon et al. (2012).
Pornography and Other Adult Entertainment	Hudson (2008); Reast, Maon et al. (2013); Cai, Jo et al. (2012); Lindgreen, Maon et al. (2012).
Brothels	Hudson (2008); Devers, Dewett et al. (2009).
Strip Clubs	Devers, Dewett et al. (2009).
Abortion Service Providers	Hudson (2008); Lindorff, Jonson et al. (2012).
Men's Bathhouses⁴³	Hudson (2008); Hudson and Okhuysen (2009).
Brothels	Wolfe and Blithe (2015).
Mixed Martial Arts	Helms and Patterson (2014).
Professional Wrestling	Hudson (2008).
Swinger's Clubs	Hudson (2008).
Cosmetic Surgery	Adams (2012).
Tattoo	Adams (2012).
Nuclear Energy	Grougiou, Dedoulis et al. (2016).
Weapons and/or Military Equipment	Hong and Kacperczyk (2009); Grougiou, Dedoulis et al. (2016).
Alcohol	Grougiou, Dedoulis et al. (2016); Novak and Bilinski (Dec 2014); Jo and Na (2012).
GM Foods	Ellen and Bone (Spring 2008).
E-Cigarettes	Tharchen and Garud (2017).
Wood Pellet⁴⁴ Market	Hiatt and Park (2016).
Medical Marijuana	Bottorff, Bissell et al. (2013).
Funeral Industry	Carden (2001).
Private Security Industry	Hansen L�fstrand, Loftus et al. (2016).

Source: Various

⁴² This table includes research on stigmatized, contested, sin, dirty and vice industries. Assumption for my thesis is that they are synonymous.

⁴³ Men's bathhouses are locations where gay men meet and have sex. They are currently on the decline in the U.S. (Jan 23 2014).

⁴⁴ Wood pellet market is growing globally. Wood pellets are used as an alternative for fuel, heat and electricity. Environmental and climate impacts remain unsettled (Zeller, Feb 1 2015).

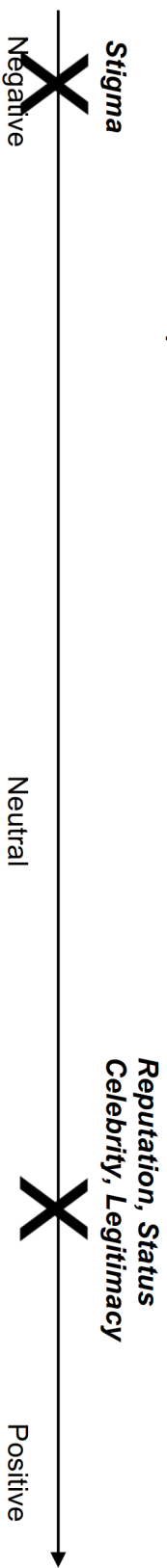
2.1.6 Construct Differentiation

Although there are phenomena discussed in the organizational literature that upon first glance seem strikingly similar to stigma, there are subtle but important differences between the terms “stigma,” “legitimacy,” “celebrity,” “reputation,” and “status” (Devers, Dewett et al., 2009). These constructs differ in terms of definition, in terms of whether the construct is individuating, on the foundational literature in which it is based, the social basis, on whether or not it requires an affective response (also known as emotional response), and on the outcome (Devers, Dewett et al., 2009). See *Table 4: Comparison of Different Social Evaluation Constructs*. According to Devers, Dewett et al. (2009, p. 154), stigma differs from the other constructs in terms of the “social evaluation spectrum.” More precisely, Devers, Dewett et al. (2009, p. 154) claim that:

[...] relative to organizational-level stigma research, the reputation, status, celebrity and legitimacy literatures are more fully developed, theoretical and empirical examinations of these constructs generally focus on the neutral to positive end of the respective continua (Mannor, Block et al., 2006). Organizational stigmas, on the other hand, clearly register only on the negative side of the social evaluation spectrum. Nevertheless, because the literature is mostly silent with respect to the “dark side” of organizational-level evaluations (Hirsch & Pozner, 2005), our understanding of the consequences of negative social assessments, such as stigma, for organizations is underdeveloped.

In other words, the primary difference between stigma and the other four constructs is the fact that stigma runs on the negative side of the social evaluation spectrum (Devers, Dewett et al., 2009; Hirsch & Pozner, 2005; Mannor, Block et al., 2006). See *Figure 1: Social Evaluation Spectrum*. For these reasons, the study of stigma is worthy of investigation.

Figure 1: Social Evaluation Spectrum



Source: Own Elaboration using literature by Devers, Dewett et al. (2009, p. 154)

Table 4: Comparison of Different Social Evaluation Constructs

	Reputation	Status	Celebrity	Legitimacy	Stigma
Definition	Signal of quality and behavior	Agreed-upon social rank	Combination of prominence and underconformance or overconformance to norms	Perceptions of appropriateness	A label that evokes a collective perception that the organization is deeply flawed and discredited
Individuating?	Individuating	Individuating	Individuating	Non-individuating	De-individuation
Foundational Literature	Signaling Theory	Network theory	Sociology of media	Neo-institutional theory	Labeling theory
Social Basis	Performance and quality signals	Pattern of affiliations and centrality	Media stories	Normative fit	Labeling and social control
Requires affective Response	No	No	Yes Positive Affect	No	Yes Negative Affect
Outcomes	Performance attractiveness as a partner	Preferential interpretation of statements and actions	Access to resources and opportunities	Access to resources	Disidentification and social and economic sanctions

Source : Devers, Dewett et al. (2009, p. 155)

2.1.7 Positive and Negative Consequences of Organizational Stigma

This section describes the positive and negative consequences of organizational stigma.

Positive Consequences

Research on the positive aspects of organization stigma has been scant (Helms & Patterson, 2014). Recently, Helms and Patterson (2014) investigated how mixed martial arts (MMA) organizations have been able to spin stigma in a positive way in order to benefit from its existence. More precisely, the authors state stigma can act as a motivational force (Elsbach & Sutton, 1992; Hills, Voronov et al., 2013; Hudson & Okhuysen, 2009; Vergne, 2012; Voronov, De Clercq et al., 2013) that can serve advantageous if used to help increase acceptance (Helms & Patterson, 2014). This is known as co-opting and is discussed further in section 2.1.9.5.

Negative Consequences

Research has shown that in order for long-term survival, firms need legitimacy (Singh, Tucker et al., 1986), social support from stakeholders (Deephouse, 1999; Hannan & Freeman, 1984; Vergne, 2012), and access to resources (Pozner, 2008b; Sutton & Callahan, 1987). Organizational stigma has been shown to have a negative impact on the success of organizations by impacting firms in various ways (Hudson & Okhuysen, 2014). The negative consequences of organizational stigma can result in sanctions and “disidentification from stakeholders (Elsbach & Bhattacharya, 2001)” (Piazza & Perretti, 2015, p. 724). Specifically, Carberry and King (2012, p. 1145) describe: “[...] any pressures that can potentially lead to stigmatization can affect an organization’s ability to govern and maintain healthy relationships with stakeholders.” Similarly, Vergne (2012, p. 1027) describes the importance of social approval by stating that: “keeping disapproval at a minimum is a key strategic achievement, because disapproval reduces a firm’s capacity to find investors, build stable alliances, or maintain a loyal customer base (Kreiner, Ashforth et al., 2006; Sullivan, Haunschild et al., 2007).” Moreover, Tracey and Phillips (2016, p. 3) have discussed the consequences of organizational stigmatization as: “[...] potentially fatal: key stakeholders such as investors, customers, and prospective employees may avoid the organization because they fear being stigmatized by association, which can lead to isolation and starve it of the requisite resources (Pozner, 2008b; Sutton & Callahan, 1987).”

Research has also shown that stakeholder impressions have a very strong affect on the identity of an organization, both internally within the organization and externally among stakeholders (Tracey & Phillips, 2016). Tracey and Phillips (2016, p. 740) state that: “[...] changes

in how an organization is viewed externally can act as a ‘destabilizing⁴⁵ force’ on identity that requires ‘members to reconstruct and revisit their organizational sense of self’ (Gioia, Schultz et al., 2000, p. 67)”. In other words, when firms experience the affects of negative stigma, it impacts the organizational identity of firms (Gioia, Schultz et al., 2000). In turn, these firms are motivated to change how they define themselves (Tracey & Phillips, 2016). Moreover, Tracey and Phillips (2016) describe how this identity destabilization (Gioia, Schultz et al., 2000) can cause cognitive distress to emerge within the employees of a stigmatized organizations, thereby creating ruptures and turmoil among and within the organization (Elsbach & Kramer, 1996). More specifically, Tracey and Phillips (2016, p. 749) found that:

[...] stigmatization creates divided loyalties in organizations, with some members sympathetic to those who are stigmatizing it, despite being treated badly by them, and “blame” attributed to leaders for associating the organization with a stigmatized group. The result is that organizations can become reflections of their environments. In other words, the stigmatization processes that are played out externally are echoed inside organizational boundaries.

Vergne (2012) and Tracey and Phillips (2016) also describe how negative spillovers exist between firms in the same or similar industries when one experiences stigma. This is related to the phenomenon originally described by Goffman (1963b, p. 30) in regards to individual level stigma where he states: “[...] the problems faced by stigmatized persons spread out in waves of diminishing intensity among those they come in contact with.” Durand and Vergne (2014, p. 1205) specifically find that when one firm in a stigmatized industry is attacked by the media, other firms in a similar industry are: “[...] likely to divest some assets from that industry, both to differentiate themselves from the alleged offenders and to reduce their dependence on a tarnished peer group. In so doing, they deflect negative spillovers and demonstrate their willingness to take action vis-à-vis their core stakeholders.” Moreover, Durand and Vergne (2014, p. 1206), state that the more similar an organization to the one who was being attacked by the media, the more likely such an organization will feel the negative spillage affects and feel a need to “demarcate” themselves more clearly. In addition, according to Durand and Vergne (2014, p. 3): “[...] Because industry peers usually share many common features, audiences tend to lump all organizations together under a single umbrella category, thereby gathering the negative features that the media attributed to the whole industry.” In consequence, stigma transferred from one organization to others can cause “network partners” to be unwilling to have relationships with organizations that are stigmatized (Hudson & Okhuysen, 2009, p. 261).

⁴⁵ Destabilize is defined as “upset the stability of; cause unrest in” (Merriam-Webster, 2017i).

Another negative consequence of organizational stigma is that corporate social responsibility (CSR) initiatives are less affective and perhaps counterproductive (Ashforth & Gibbs, 1990; Carberry & King, 2012; Durand & Vergne, 2014). Traditionally when companies think of impression management, many turn to corporate social responsibility initiatives as a way to improve a company's public image (Dutton & Dukerich, 1981; Vergne, 2012). More specifically, firms believe when they notify the public of positive actions taken on behalf of the company, that this has the affect of countering negative media attacks (Durand & Vergne, 2014; Dutton & Dukerich, 1981). However, Vergne (2012) argues findings from uncontested or unstigmatized industries cannot be extrapolated to stigmatized industries, stating that: "[...] finding [s] from studies of uncontested industries is unlikely to generalize to stigmatized sectors, characterized by social contestation, hostile audiences, and distancing between industry insiders and outsiders" (Vergne, 2012, p. 1205). Firms in these industries are thought to use "concealment of stigmatized attributes" (Hudson & Okhuysen, 2009, p. 140). This is the case because according to Carberry and King (2012, p. 1159), these firms: "[...] face more intense scrutiny from audiences. Stakeholders may view any impression management actions, therefore, as empty gestures, rendering such actions ineffective mechanisms of defence that may actually accelerate stigmatization (Suchman, 1995)." This is explained by the fact that CSR acts as a way to "reinforce the outsiders' suspicion about the industry" (Durand & Vergne, 2014, p. 1205). In other words, it brews more mistrust for firms which are already deeply stigmatized against (Durand & Vergne, 2014).

2.1.8 Exposure to Stigma

Before delving into the literature on strategic responses to stigma, research has found that different firms in stigmatized industries experience different levels of stigma (Hudson, 2008; Vergne, 2012). Hudson (2008, p. 258) stated: "[...] the greater the exposure of the stigmatized organization(s), the greater the awareness of stigmatizing audiences and the greater the stigma expressed by the audiences and experienced by the organization." The literature has described differences in levels of stigmatization experienced by firms based on different audiences and the various stigmatizing settings (Hudson, 2008). An example is the case of the pornography industry, where the stigma is higher in the U.S. than in European countries (Hudson, 2008). More precisely, Hudson (2008, p. 258) states that: "stigmatizing audiences in one social setting may be more or less stigmatizing than those in other settings. For example, gay bars may be less stigmatized in some U.S. cities than others. Pornography and pornographers are less stigmatized in many European countries than in the United States." Another example is the case of GMOs where the

stigma is higher in European countries than in the U.S. (Lucht, 2015). More specifically Hudson (2008, p. 258) describes the differences in levels of stigma across audiences in the following way:

The observation that some audiences stigmatize to a greater or lesser degree than do others, or that contests between stigmatizing⁴⁶ and non-stigmatizing audiences determine the relative level of stigmatization expressed and experienced, also suggests that there can be variation in core-stigma across social settings for a particular type of organization as well. In other words, stigmatizing audiences in one social setting may be more or less stigmatizing than those in other settings.

Both Hudson (2008) and Voss (2015) have acknowledged the fact that stigma can be both slow to build, and slow to diminish. Moreover, according to Voss (2015, p. 13) research has shown that: “stigmatized businesses operate in changing moral landscapes, as stigma can increase or decrease over time as a result of local and global events (Ragins, 2008), and organizational environments and often characterized by transient fads and beliefs (Abrahamson & Fairchild, 1999).” The following section provides an in-depth examination of the emerging research on strategic responses to organizational stigma.

2.1.9 Strategic Responses to Organizational Stigma⁴⁷

This section provides a literature review on previous research looking at how organizations which face core-stigma, strategically respond to stigma See *Table 5: Overview of Responses to Organizational Stigma*. In the following section, each of these responses will be discussed in detail. The first strategic response discussed are the disengagement, decoupling and exiting strategies.

⁴⁶ Stigmatizing audiences and hostile audiences will be used interchangeably in my thesis.

⁴⁷ These strategic responses to organizational stigma include firms who experience core-stigma, arising from their membership in a stigmatized category, and not event-stigma.

Table 5: Overview of Responses to Organizational Stigma

Theory	Definition	Authors
(1) Disengagement Strategy/ Decoupling Strategy/ Exiting Strategy	<ul style="list-style-type: none"> Disassociating from the industry, or geographic location that experiences stigma, either by disengagement, decoupling or exiting (Devers, Dewett et al., 2009; Durand & Vergne, 2014; Piazza & Perretti, 2015). 	Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015).
(2) Category Straddling/ Dilution Strategy/ Migration Strategy/ Specialist Strategy	<ul style="list-style-type: none"> Disassociating with peers by differentiating and loosening ties (Durand & Vergne, 2014; Vergne, 2012). Core-stigmatized organizations are more likely to operate at specialists (non-diversified organizations) and not generalists (diversified organizations) (Hudson, 2008). 	Vergne (2012); Durand and Vergne (2014); Hsu (2006); Hudson (2008); Grougiou, Dedoulis et al. (2016).
(3) Shielding Strategy/ Hiding Strategy	<ul style="list-style-type: none"> Concealing stigma to minimize negative repercussions on the firm (Hudson, 2008; Hudson & Okhuyesen, 2009; Reimmoeller & Ansari, 2016). "Hiding strategies include the use of discrete location, signage, architecture, and limited or target advertising, all of which limit awareness by potentially stigmatizing audiences" (Hudson, 2008, p. 260). 	Hudson and Okhuyesen (2009); Reimmoeller and Ansari (2016); Hudson (2008).
(4) Challenging Strategy	<ul style="list-style-type: none"> The opposite of hiding, instead to "widely advertise their existence" (Hudson, 2008, p. 260) "Mounting challenges to the expressions of stigma" (Hudson, 2008, p. 259). 	Hudson (2008).
(5) Destigmatization Strategy	<ul style="list-style-type: none"> "Some stigmatized organizations not only develop strategies to manage stigma but actually destigmatize altogether" (Hampel & Tracey, 2016, p. 2). Destigmatization is described as to "eradicate a stigma in the eyes of a hostile audience" (Hampel & Tracey, 2016, p. 39). 	Tracey and Phillips (2016); Hampel and Tracey (2016).
(6) Co-Opting Strategy	<ul style="list-style-type: none"> "Co-opting involves actively using the stigma to gain attention and resources" (Helms & Patterson, 2014, p. 1479). 	Helms and Patterson (2014).
(7) Strategic Responses to Institutional Pressures⁴⁸	<ul style="list-style-type: none"> Strategic responses include avoidance, acquiescence, compromise, defiance and manipulation (Oliver, 1991). 	Oliver (1991).

Source: Own Elaboration from Various Sources

⁴⁸ To my knowledge, strategic responses to institutional pressures has not been examined in the context of organizational stigma. However, I believe this literature can help illuminate strategic responses to stigma used by organizations and help enrich current understanding on how firms respond to stigma.

2.1.9.1 Industry Disengagement, Decoupling and Exiting Strategies

The first type of strategic response to stigma, is industry disengagement, decoupling⁴⁹ or exiting⁵⁰. This involves a firm removing itself from the industry that experiences stigma (Devers, Dewett et al., 2009). More precisely, Devers, Dewett et al. (2009, p. 159), state that firms engage in actions which: “[...] attempt to prevent or remove the derivative of a tribal stigma” done by “physically and symbolically decoupling their organization from that market.” Devers, Dewett et al. (2009) also describe the example of a firm moving its operations outside of a country due to country-specific stigmatization. Decoupling actions are also described as: “[...] removing offending members (e.g., terminations) and units (e.g., divestitures)” (Devers, Dewett et al., 2009, p. 159). Piazza and Perretti (2015) describe a similar phenomenon, whereby they describe disengagement⁵¹ as a solution to stigma. However, they also note that undiversified organizations do not have this option as this would mean ceasing operations (Piazza & Perretti, 2015). More precisely Piazza and Perretti (2015, p. 725) state:

[...] a far more radical and transformative way to address disapproval would consist of reducing the extent of the organization's involvement in stigmatized activities. By disengaging from a category that is under duress, organizations can potentially address stigma at its source. Yet this is not always a feasible course of action: for undiversified organizations whose core activities are targeted (Hudson & Okhuysen, 2009) reducing the level of exposure to a stigmatized category would be substantially equivalent to exiting the field.

Piazza and Perretti (2015, p. 725) also explain how even if disengaging from a stigmatized sector was an option, it is not always an attractive one due to a variety of reasons such as: “[...] switching costs (Selznick, 1949), escalation of commitment (Ross & Staw, 1993; Staw, 1976), path dependence (Vergne & Durand, 2010), inertia (Hannan & Freeman, 1984), and identity concerns (Phillips, Turco et al., 2013; Zuckerman, Kim et al., 2003).” Moreover, decoupling is used most often by firms which experience event-stigma, as opposed to core-stigma (Hudson, 2008), and has been argued to be ineffective or counterproductive for certain firms (Durand & Vergne, 2014). Specifically, Durand and Vergne (2014, p. 1209) state that: “targeted scrutiny makes decoupling ineffective because the scrutinizers are likely to reveal the act and portray it, if not as pure hypocrisy, then, at best, as lip service (Ashforth & Gibbs, 1990).” Other options, therefore, must be necessary in order for firms to deal with stigma. The next strategic response discussed is the category straddling, dilution, migration and specialist strategies.

⁴⁹ Decoupling is defined as “to eliminate the interrelationship of” (Merriam-Webster, 2017h).

⁵⁰ For the purpose of my thesis, disengagement, decoupling and exiting the industry are discussed together, as they are a set of related responses.

⁵¹ Disengagement is described as “to release or detach oneself” (Merriam-Webster, 2017j).

2.1.9.2 Category Straddling, Dilution, Migration and Specialist Strategies⁵²

Category straddling, dilution, migration and specialist strategies all describe the second method firms have to deal with stigma. Not all firms in stigmatized sectors have this option. This option is available for certain members in a stigmatized category, those with membership in multiple categories. Research has shown firms in stigmatized industries reduce stigma by disassociating with peers in their industry (Durand & Vergne, 2014). This is done by differentiating themselves, and loosening their ties with the industry (Durand & Vergne, 2014). Durand and Vergne (2014) and Piazza and Perretti (2015), describe ways firms can reduce stigma and disassociate with peers in the industry, by reconfiguring their assets away from the stigmatized industry to differentiate themselves from the “tarnished peer group⁵³” (Durand & Vergne, 2014, p. 1205). Diversifying into other non-stigmatized industries creates the dilution effect (Durand & Vergne, 2014). For instance, Hudson (2008) found that public disapproval of a tobacco firm decreased after they diversified into the fast food industry due to the dilution effect. Vergne (2012, p. 1028) has found “[...] category straddling has consistently argued—and proved empirically—that multiple category membership blurs external stakeholder expectations, thereby decreasing firms’ social evaluations (Hsu, 2006).” In other words, by blurring expectations and diluting and diverting attention away from their stigmatized activities, diversified firms dilute the stigma they face (Hsu, 2006; Vergne, 2012). Durand and Vergne (2014, p. 1208) state that: “an important but overlooked means for a firm to signal its distinctiveness to pivotal stakeholders is to loosen its association with the industry—not just rhetorically⁵⁴, but at the resource level (Devers, Dewett et al., 2009; Yu, Sengul et al., 2008).”

Grougiou, Dedoulis et al. (2016) explain this strategy as: “[...] ‘sin’ companies often simultaneously engage in non-‘sin’ operations, aiming to reduce negative exposure by diversifying their portfolio of activities (Beneish, Jansen et al., 2008).” Hudson (2008) describes a similar strategy which he calls the migration strategy, mentioning the example of Philip Morris’s expansion in the food industry in order to diversify itself into non-stigmatized industries. To summarize, category straddling, migration, and dilution strategies involve blurring categories; acknowledging the existence of stigma and also attempting to decrease interactions with hostile audiences (Tracey & Phillips, 2016). The organizational consequences of category straddling

⁵² For the purpose of my thesis, category straddling and stigma dilution represent the same strategic response to stigma. Another way to conceptualize this strategy is too think of it as firms diversifying their activities to include non-stigmatized activities.

⁵³ Tarnished peer-group refers to firs operating in the same stigmatized industry as the firm in question.

⁵⁴ Rhetoric is defined as “insincere or grandiloquent language” (Merriam-Webster, 2017v).

include less disapproval from hostile audiences, nevertheless, stigma toward the industry remains status quo (Tracey & Phillips, 2016). See Table 6: *Comparison of Approaches to Organizational Stigma*.

Hudson (2008, p. 259) describes a similar strategy as the specialist strategy. Hudson (2008, p. 259) describes the specialist strategy as: “The greater the expression of core-stigma, the more likely core—stigmatized organizations will operate as specialists, rather than generalists (Hannan, Carroll et al., 2003; Hannan & Freeman, 1977) or as single businesses with highly constrained diversification (Li & Greenwood, 2004).” Hudson (2008, p. 259) explains that a firm’s ability to diversify its activities and enter multiple lines of businesses requires: “[...] such factors as access to capital and the application or organizational competencies in multiple domains (Prahalad & Hamel, 1994).” However, for core-stigmatized organizations, doing so is more difficult due to “added complexities” (Hudson, 2008, p. 259). Hudson (2008, p. 259) argues that firms who experience core-stigma are less likely to be operating in diversified industries because firms which already experience stigma are given more attention than non-stigmatized firms. As a result, if they choose to diversify into other industries (regardless of whether it is stigmatized or non-stigmatized diversification), it would be more difficult for them as they already lack approval from the public (Hudson, 2008). More precisely, Hudson (2008, p. 259) states that:

These difficulties exist irrespective of the availability of capital and the applicability of competencies. Operations in multiple core-stigmatized domains are likely to increase the expressions of stigma either by increasing the size of stigmatizing audiences, owing to the larger size of the organization, or by allowing a coalescence⁵⁵ of multiple stigmatizing social audiences.

However, Hudson (2008, pp. 159-160) describes an exception when it comes to firms which decide to diversify into non-stigmatized domains in order to: “[...] leave or lessen its dependence on the stigmatized operations.” The above statement is also in line with the findings of Vergne (2012), who found firms diversify their activities in order to dilute the stigma they face. The next strategic response discussed is the shielding/hiding strategy.

2.1.9.3 Shielding and Hiding Strategies

The third type of strategic response to stigma described in the literature is shielding or hiding strategies. Shielding involves concealing behaviors that according to Tracey and Phillips

⁵⁵ Coalescence is defined as “to unite for a common end” (Merriam-Webster, 2017f).

(2016, p. 6): “[...] involves concealing the stigma to minimize its negative repercussions (Hudson & Okhuysen, 2009; Reinmoeller & Ansari, 2016).”

The shielding strategy is defined according to Hudson (2008, p. 260) as specially targeting the audiences of information, such as “using ‘subdued⁵⁶ or even nonspecific’ type of advertising, and communicating with those ‘in the know’ (Hudson & Okhuysen, 2004, 2005).” Hudson (2008, p. 260) describes the following examples: “[...] pornographers [who] may advertise in weekly alternative newspapers rather than in wide-circulation papers. Similarly, men’s bathhouses will use gay newspapers (Hudson & Okhuysen, 2003), and abortion service providers will use feminist newsletters.” This is done to avoid receiving negative attention (Hudson, 2008, p. 260). Managing boundaries is a way of ensuring survival (Hudson & Okhuysen, 2009). More specifically, Hudson and Okhuysen (2009, p. 148) state that:

[...] core-stigmatized organizations like bathhouses do not and cannot repair their stigmatized attributes to gain social approval. To do so, they would need to abandon their core attributes and cease being a bathhouse. We found that men’s bathhouses instead survive by managing their boundaries to minimize scrutiny from hostile, stigmatizing audiences.

Shielding involves managing organizational boundaries while also acknowledging the existence of stigma but also attempting to avoid interactions with hostile audiences as much as possible (Tracey & Phillips, 2016). Moreover, the organizational consequences of shielding include less disapproval (if shielding is done well) from hostile audiences, however, stigma toward the industry remains status quo (Tracey & Phillips, 2016). See *Table 6: Comparison of Approaches to Organizational Stigma*. The next strategic response discussed is the hiding strategy. Hudson (2008, p. 260) describes a similar strategy, referred to as the hiding strategy, which he describes as including: “[...] discreet location, signage, architecture, and limited or target advertising, all of which limit awareness by potentially stigmatizing audiences.” The objective of hiding strategies is to decrease stakeholder awareness or public awareness of the stigmatized activities and therefore bring the damaging outcomes that the firm can experience from it down to minimal levels (Hudson, 2008). The next strategic response discussed is the challenging strategy.

⁵⁶ Subdued is defined as “lacking in vitality, intensity, or strength” (Merriam-Webster, 2017z).

2.1.9.4 Challenging Strategy

The fourth type of strategic response to stigma is the challenging strategy. Challenging strategies involve actively bringing attention too, and opposing stigma (Hudson, 2008). Hudson (2008, p. 260) describes the challenge strategy as: “[...] mounting challenges to the expressions of stigma or the values of stigmatizing audiences. These strategies have the impact of lessening the negative consequences of core-stigmatization.” Hudson (2008, p. 260) states as examples:

Many adult bookstores and strip clubs use signage and names that directly bring attention to the organization and so challenge the stigmatization of their core attributes. These organizations use normalizing accounts (Elsbach, 2003; Elsbach & Sutton, 1992), such as freedom of expression and individual liberty ideals, to challenge the negative evaluation of critical social audiences (Frank, 2007; Kirk, 2002; Rich, May 20 2001).

The next strategic response discussed is the co-opting strategy.

2.1.9.5 Co-Opting⁵⁷

The fifth type of strategy is the co-opting strategy. Co-opting strategy involves using stigma to a firm’s advantage (Helms & Patterson, 2014). According to Hampel and Tracey (2016, p. 6):

co-opting involves actively using the stigma to gain attention and resources (Helms & Patterson, 2014; Tracey & Phillips, 2016). For example, Helms and Patterson (2014), they find that mixed martial arts (MMA) organizations co-opted the stigma of violence, using it to gain new audiences and reduce hostility among existing audiences.

Research on co-opting has found MMA organizations use two different strategies in order to co-opt the source of the stigma (Helms & Patterson, 2014). First, according to (Helms & Patterson, 2014) firms attempt to co-opt labels in order to attract audiences that they believe could be converted to supporters of the firm (Helms & Patterson, 2014). Second, they engage in “two forms of work around the practice, one focused on shaping MMA itself and one focused on engaging with and gaining the acceptance of those critical audiences evaluating it” (Helms & Patterson, 2014, p. 1470). Specifically, Helms and Patterson (2014, p. 1480) found:

[...] stigma leads to the persuading of critical audiences by stigmatized actors. Specifically, we found that stigma motivates organizational actors to purposefully involve themselves with, accommodate, defend, and, ultimately, convince members of critical audiences to increase their involvement with the practice, work to decrease negative social and economic sanctions, and more positively evaluate stigmatized organizations

⁵⁷ Co-Opting is defined as “to cause or force (someone or something) to become part of your group, movement, etc.: to use or take control of (something) for your own purposes” (Merriam-Webster, 2017e).

Co-opting involves using the negative stigma as a way to gain attention and lessen negative perceptions (Tracey & Phillips, 2016). It also involves acknowledging the existence of stigma but also attempts to gain attention from hostile audiences (Tracey & Phillips, 2016). Moreover, the organizational consequences of co-opting include less disapproval from hostile audiences and more support from new audiences (Tracey & Phillips, 2016). Additionally, stigma toward the industry decreases over time (Tracey & Phillips, 2016). See *Table 6: Comparison of Approaches to Organizational Stigma*. The final strategic response discussed under existing organizational stigma literature is the destigmatization strategy.

2.1.9.6 Destigmatization

The sixth strategic response discussed is the destigmatization strategy. Tracey and Phillips (2016) have highlighted that previous research on stigma in organizations have looked at how organizations cope with stigma but not how they try to remove stigma or move the industry from a state of stigmatization to legitimacy. Hampel and Tracey (2016, p. 3) describe the example of the online dating industry which was originally stigmatized due to a perception it promoted “promiscuity.” Another example which Hampel and Tracey (2016, p. 3) describe is that of the life insurance industry which was originally stigmatized by the church due to the perception that life insurance challenged, “the sanctity of life by putting a price on it (Zelizer, 1978).” However, the insurance industry which was later destigmatized and looked at from the perspective of providing the ability of “securing the financial survival of vulnerable families (Zelizer, 1978)” (Hampel & Tracey, 2016, p. 3). Tracey and Phillips (2016) explain that some firms attempt to develop strategies to destigmatize the industry instead of solely managing the stigma. Furthermore, the authors develop a two-step process model where they find that firms first engage in stigma reduction strategies, and then stigma elimination strategies (Tracey & Phillips, 2016). More specifically, Tracey and Phillips (2016, p. 4) explain their model in the following way:

We find that an organization can move from stigma to legitimacy by removing the fear it engenders and showing its positive service to society. Our two-step process model suggests that an organization that enacts this strategy first engages in stigma reduction work to minimize overt hostility, and second in stigma elimination work to gain support from hostile audiences. Intriguingly, our analysis suggests that when successful, this strategy purges the organization of its stigma and actually converts erstwhile hostile audiences into supporters that advocate on its behalf.

Destigmatization involves convincing hostile audiences the activities of a firm are non-threatening and can provide benefits to society (Tracey & Phillips, 2016). It also involves refusing to admit the existence of stigma but also attempting to engage with hostile audiences in an

assertive and proactive manner (Tracey & Phillips, 2016). Moreover, the organizational consequences of destigmatization involve approval from existing hostile audiences and approval from new audiences (Tracey & Phillips, 2016). Additionally, stigma toward the industry disappears over time (Tracey & Phillips, 2016). *See Table 6: Comparison of Approaches to Organizational Stigma.*

Table 6: Comparison of Approaches to Organizational Stigma

Approach	Shielding/Hiding	Straddling/ Dilution/Migration	Co-Opting	Destigmatization
Empirical Example	Hudson and Okhuysen (2009)	Vergne (2012)	Helms and Patterson (2014)	Hampel and Tracey (2016)
Organizational Management of Stigmatization	Manage organizational boundaries	Blur categories to dilute stigma	Use stigma to gain attention and soften negative views	Show organization as beneficial and non-threatening to society
Response to Stigma	Acknowledge its existence	Acknowledge its existence	Acknowledge its existence	Refuse to acknowledge its existence
Interaction with Hostile audiences	Avoid as much as possible	Reduce to minimum	Use to gain attention and soften views	Engage proactively and assertively
Organizational Consequences	Less disapproval if organization is shielded well	Less disapproval	Less disapproval by critics and support by new audiences	Widespread approval among old and new audiences
Existence of Stigma among critics over time	Continues with same strength	Continues with same strength	Continues with reduced strength	Disappears form discourse

Source: Modified from Hampel and Tracey (2016, p. 55).

2.2 Institutional Theory

Institutional theory is a perspective recognized as one of the leading theories in organizational research (Vergne, 2011). It describes organizational choice as being constrained or limited by external pressures imposed on them and by their environment (Oliver, 1991). Specifically, it has been recognized as a theory which is preoccupied with looking at “pressures and constraints of the institutional environment” (Oliver, 1991, p. 147). Institutions in this context are defined as “regulatory structures, government agencies, laws, courts, and professions” (Oliver, 1991, p. 147). The theory recognizes the importance that public opinion and interest groups have on organizations (Oliver, 1991), which is why it is relevant for examining organizational stigma. Institutional theory emphasizes the importance and necessity of

conforming to the institutional environment and to external rules and norms in order to ensure survival of the firm (Oliver, 1991, p. 148). Moreover, according to Elsbach and Sutton (1992, pp. 700-701):

Institutional theory provides a useful but incomplete view of how organizations cope with conflicting, inconsistent demands. In addition to adopting visible and institutionalized structures and practices that mask or distract attention from controversial activities, organizations use spokespersons to provide positive interpretations of controversial actions. These interpretations include using impression management tactics to portray structures and actions in ways intended to garner endorsement and support. Thus, a greater understanding of how organizations acquire and protect legitimacy may be gained by blending institutional and impression management perspectives.

Institutional theory is especially relevant for the global seed and agrochemical industry because of the heavy role institutional factors, such as government, play in the regulations (Lucht, 2015) and therefore, reputation of this industry. Institutional theory also recognizes the importance of organizations' attempt "to obtain stability and legitimacy" (Oliver, 1991, p. 149), and states that organizations are driven by interest that is socially or institutionally defined (Oliver, 1991).

2.2.1 Strategic Responses to Institutional Pressures

Oliver (1991, p. 146) describes "a typology of strategic response to institutional pressures" by proposing five strategic responses. The purpose of the typology is to understand: "[...] the behavior of organizations in institutional contexts and the conditions under which organizations will resist institutionalization" (Oliver, 1991, p. 145). See *Table 7: Strategic Responses* for an overview of the five strategic responses put forth by Oliver (1991) merged with literature on strategic responses to stigma.

2.2.1.1 Acquiescence

Acquiescence⁵⁸ is the first strategic response proposed by Oliver (1991). Acquiescence is described as a strategy in which a company complies with institutional pressures, and which can take several forms, namely; habit, compliance or imitation (Oliver, 1991). Habit is explained by Oliver (1991, p. 152) as the: "unconscious or blind adherence to preconscious or taken-for-granted rules or values." Imitation, on the other hand, is described as: "conscious or unconscious mimicry of institutional models" (Oliver, 1991, p. 152). Lastly, compliance, unlike habit, or imitation is: "[...] conscious obedience to or incorporation of values, norms, or institutional requirements"

⁵⁸ Acquiescence is defined as "to accept, comply, or submit tacitly or passively" (Merriam-Webster, 2017a).

(Oliver, 1991, p. 152). Organizations are likely to choose acquiescence if it is in the organizations' best interest to do so, or if for example they are unaware of the pressures (Oliver, 1991). Acquiescence is a passive strategy and is likely to be used by firms which believe they will gain social legitimacy, or economic efficiency from doing so (Oliver, 1991). In the case of stigma, acquiescence is an unlikely strategy as acquiescence is defined as "to accept, comply, or submit tacitly or passively" (Merriam-Webster, 2017a). Acquiescence to stigma would not be in the best interest of the firm, as this would involve admission of guilt, which according to Durand and Vergne (2014) would bring more attention to the stigmatized activities of the firm, and therefore would not be in the best interests of the firm. The next strategic response discussed is compromise.

2.2.1.2 Compromise

Compromise is the second type of strategic response that Oliver (1991) presents. Compromise is enacted when: "organizations are confronted with conflicting institutional demands or with inconsistencies between institutional expectations and internal organizational objectives related to efficiency or autonomy" (Oliver, 1991, p. 153). Compromise strategy involves the following three sub strategies: balance, pacify, or bargain (Oliver, 1991). Balance tactics are defined as: "[...] attempts to accommodate constituents with different pressures and expectations" (Oliver, 1991, p. 153). More specifically, balance is about trying to come up with an outcome that would be deemed acceptable by both parties, or by all conflicting parties (Oliver, 1991). Pacify, on the other hand, is about reaching partial conformity to expectations (Oliver, 1991). Lastly, bargaining: "involve [s] the effort of the organization to exact some concessions from an external consistent in its demands or expectations" (Oliver, 1991, p. 154). Compromise is unlikely to be relevant in the case of stigma management because even though firms may attempt to compromise with stakeholder demands, they are not compromising on stigma. Firms inherently do not want to accept stigma of any kind. Even though firms may use balancing, pacifying or bargaining techniques in order to appease stakeholders, they do not do so in order to tackle stigma. Moreover, compromise is unlikely to be used to tackle stigma as compromising to stigma would still involve the admittance of guilt, which according to Durand and Vergne (2014) would be an unfavorable strategy for firms to cope with stigma. The next strategic response discussed is avoidance.

2.2.1.3 Avoidance

Avoidance is passive strategic response described by Oliver (1991). Avoidance is a passive response which is focused on evading the need to conform (Oliver, 1991). Oliver (1991)

defines as: “the organizational attempt to preclude the necessity of conformity; organizations achieve this by concealing their nonconformity, buffering themselves from institutional pressures, or escaping from institutional rules or expectations” (Oliver, 1991, p. 154). The three sub strategies within the avoidance strategy are: concealment tactics, buffering tactics and escape tactics (Oliver, 1991). Concealment tactics are described as: “disguising nonconformity behind a façade of acquiescence” (Oliver, 1991, p. 154). Buffering, on the other hand: “refers to a company’s attempt to reduce the extent to which it is externally inspected, scrutinized, or evaluated by partially detaching or decoupling its technical activities from external contact” (Oliver, 1991, p. 155). Lastly, escape behaviors is defined as: “exit [ing] the domain within which pressure is exerted or significantly alter its own goals, activities, or domain to avoid the necessity of conformity altogether” (Oliver, 1991, p. 155).

A link between shielding and hiding strategies as discussed by Hudson and Okhuysen (2009); Reinmoeller and Ansari (2016); and Hudson (2008) can be made with the conceal tactic of Oliver (1991). Moreover, a link between category straddling, stigma dilution, stigma migration and specialist strategies discussed by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) and Hudson (2008) can be made with the buffer tactic of Oliver (1991). In addition, a link between disengagement, decoupling, and exiting strategies as described by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) can be made with the escape tactic by Oliver (1991). *See Table 7: Strategic Responses.*

2.2.1.4 Defiance

Defiance is an active form of disagreement or opposition to the institutional pressures imposed on them (Oliver, 1991). The three sub tactics which make up the defiance category are: dismissal, challenge and attack (Oliver, 1991). Dismissing is described as: “ignoring institutional rules and values, is a strategic option that organizations are more likely to exercise when the potential for external enforcement of institutional rules is perceived to be low or when internal objectives diverge or conflict very dramatically with institutional values or requirements” (Oliver, 1991, p. 156). Challenge is described as: “[...] a more active departure from rules, norms, or expectations than dismissal” (Oliver, 1991, p. 156). Lastly, attacking is described as: “[...] indistinguishable from challenge as a tactic of defiance by the exposure and aggressiveness of the organization’s active departure from institutional pressures and expectation” (Oliver, 1991, p. 157).

A link between challenge strategy as described by Hudson (2008) can be made with the challenge tactic and attack tactic put forth by Oliver (1991). See *Table 7: Strategic Responses*. The next strategic response discussed is manipulation.

2.2.1.5 Manipulation

Manipulation is the fifth and final response presented by Oliver (1991) and is described as the most active response. This is because manipulation techniques are intended to: “[...] actively change or exert power over the content of the expectations themselves or the sources that seek to express or enforce them” (Oliver, 1991, p. 158). Manipulation involves three sub strategies: co-opting, influencing, and controlling (Oliver, 1991). Co-opting is explained as a firm which for example, attempts: “[...] to persuade an institutional constituent to join the organization or its board of directors” (Oliver, 1991, p. 157). Influence is explained as: “tactics may be more generally directed toward institutionalized values and beliefs or definitions and criteria of acceptable practices or performance” (Oliver, 1991, p. 158). Finally, controlling tactics are defined as: “specific efforts to establish power and dominance over the external constituents that are applying pressure on the organizations” (Oliver, 1991, p. 158). Manipulation tactics are the most active strategic responses as they involve: “actively alter [ing], re-creat [ing], or control [ing] the pressures themselves or the constituents that impose them” (Oliver, 1991, p. 159).

A link between co-opting strategy as described by Helms and Patterson (2014) can be made with the co-opt tactic as described by Oliver (1991). Moreover, a link between destigmatization strategy as described by Hampel and Tracey (2016) and Tracey and Phillips (2016) can be made with the influence tactic as described by Oliver (1991). See *Table 7: Strategic Responses*.

Table 7 : Strategic Responses

Strategies by Oliver (1991)	Tactics and Definitions by Oliver (1991)	Link to Existing Literature on Organizational Stigma Strategies
Acquiesce	Adoption of demands—Organizational acquiescence depends on the organization's conscious intent to conform, its degree of awareness of institutional processes, and its expectations that conformity will be self-serving to organizational interests. <ol style="list-style-type: none"> 1. Habit: Following invisible, taken-for-granted norms 2. Mimicking institutional models 3. Obeying rules and accepting norms 	<ul style="list-style-type: none"> ▪ Unlikely to be used to tackle stigma as this would involve admittance to guilt. Admittance to guilt would not be a favorable action for firms to cope with stigma according to Durand and Vergne (2014).
Compromise	Attempt to achieve partial conformity in order to accommodate at least partly all institutional demands <ol style="list-style-type: none"> 1. Balance: Balancing the expectations of multiple constituents 2. Pacify: Placating and accommodating institutional elements 3. Bargain: Negotiating with institutional stakeholders 	<ul style="list-style-type: none"> ▪ Unlikely to be used to tackle stigma as compromising to stigma would still involve the admittance of guilt, which according to Durand and Vergne (2014) would be an unfavorable strategy for firms to cope with stigma.
Avoid	Attempt at precluding the necessity to conform to institutional demands <ol style="list-style-type: none"> 1. Conceal: Disguising nonconformity 2. Bugger: Loosening institutional attachments 3. Escape: Changing goals, activities, or domains 	<ul style="list-style-type: none"> ▪ A link between shielding and hiding strategies as discussed by Hudson and Okhuysen (2009), Reinmoeller and Ansari (2016), and Hudson (2008) can be made with the conceal tactic of Oliver (1991). ▪ A link between category straddling, stigma dilution, stigma migration and specialist strategies discussed by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) and Hudson (2008) can be made with the buffer tactic of Oliver (1991). ▪ A link between disengagement, decoupling, and exiting strategies as described by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) can be made with the escape tactic by Oliver (1991).

Defy	<p>Explicit rejection of at least one of the institutional demands</p> <ol style="list-style-type: none"> 1. Dismiss: Ignoring explicit norms and values 2. Challenge: Contesting rules and requirements 3. Attack: Assaulting the sources of institutional pressure 	<ul style="list-style-type: none"> ▪ A link between challenge strategy as described by Hudson (2008) can be made with the challenge tactic and attack tactic put forth by Oliver (1991).
Manipulate	<p>Active attempt to alter the content of the institutional demands</p> <ol style="list-style-type: none"> 1. Co-Opt: Importing influential constituents 2. Influence: Shaping values and category 3. Control: Dominating institutional constituents and processes 	<ul style="list-style-type: none"> ▪ A link between co-opting strategy as described by Helms and Patterson (2014) can be made with the co-opt tactic as described by Oliver (1991). ▪ A link between destigmatization strategy as described by Hampel and Tracey (2016) and Tracey and Phillips (2016) can be made with the influence tactic as described by Oliver (1991).

Source: Modified from Oliver (1991, p. 152) to make links to strategic responses to stigma literature.

2.3 Literature Gap

My thesis merges the literature on strategic responses to organizational stigma literature and strategic responses to institutional processes, and responds directly to the call made by Roulet (2015, p. 30), who stated: “This study opens different paths for future research. In particular: what are the strategies used by organizations to face stigma? Organizations tend to prevent stigma contagion rather than confront it (Hudson & Okhuysen, 2009).” Similar calls have also been made by Helms and Patterson (2014, p. 1454), who have stated the presence of “calls for theories on stigma’s removal.” A similar call was made by Mishina and Devers (2012). Moreover, Helms and Patterson (2014), have stated that: “The vast majority of studies on stigma have been on the non-acceptance of stigmatized organizational actors by audiences, and the efforts of stigmatized actors to either manage the negative sanctions associated with them or pass as normal during social interactions.” Devers, Dewett et al. (2009, p. 167) have also stated that: “Organizational scholars have focused little attention on what an organizational stigma is, how an organizational stigma develops, or the effects of a stigma on organizations.” Moreover, research looking at the ways in which firms react or “respond when an entire field’s legitimacy is threatened (Desai, 2011, p. 263),” has not been extensively examined in the literature (Desai, 2011; Jonsson, Greve et al., 2009). Also, Devers, Dewett et al. (2009, p. 154) state:

Organizational stigmas, on the other hand, clearly register only on the negative side of the social evaluation spectrum. Nevertheless, because the literature is mostly silent with respect to the “dark side” of organizational-level evaluations (Hirsch & Pozner, 2005), our understanding of the consequences of negative social assessments, such as stigma, for organizations is underdeveloped.

Moreover, my research responds to the call made by Vergne (2012, p. 119) who called for research on industries that also operate in one stigmatized industry: “It should be noted that our findings were obtained for an industry wherein firms are already diversified. An interesting angle would be to explore the outcomes in a stigmatized industry populated by single-business organizations.” My thesis addresses some of these gaps by addressing the following research question: ***How does exposure to stigma affect strategic response to stigma?***

CHAPITRE 3/CHAPTER 3

APPROCHE MÉTHODOLOGIQUE/METHODOLOGICAL APPROACH

“Public sentiment is everything. With public sentiment, nothing can fail: without it nothing can succeed.”

Lincoln-Douglas Debate at Ottawa
August 21, 1858 (Livingston, 1997, p. 385)

3.1 Overview of Methodology

As previously mentioned, my research question is: ***How does exposure to stigma affect strategic response to stigma?*** See Figure 2: Research Question. To answer my research question, I conduct an in-depth multiple case study analysis of the *Big Six* firms in the global seed and agrochemical industry. The objective of this section is to ensure transparency by rigorously discussing all aspects of my methodology, to allow for replication. The question under investigation warrants a case study design as it involves answering a “how” question that focuses on a contemporary event which does not require control of events (Yin, 2013, p. 9). See Table 8: Methods.

Table 8: Methods

METHOD	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	How, why?	yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival Analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case Study	How, why?	No	Yes

Source: COSMOS Corporation (Yin, 2013, p. 9)

Figure 2: Research Question



Source: Own Elaboration

3.2 Research Setting: The Big Six firms in the Global Seed and Agrochemical Industry

My thesis examines strategic responses to organizational stigma in the global seed and agrochemical sector. This section of my thesis discusses relevant aspects of the industry as it pertains to my thesis.

3.2.1 Choice of industry

The global seed and agrochemical industry⁵⁹ was chosen for four reasons. See *Table 9: Overview of Reasons for Industry Selection*. An in-depth explanation of each reason follows.

Table 9: Overview of Reasons for Industry Selection

Criteria for Selection	Global Seed and Agrochemical Industry
1. Industry Relevance: Industry growing rapidly, evolving quickly, operating internationally and relevant for international business today.	Yes: Industry experiencing consolidation and public concerns.
2. Divisions of Stigma: Industry that experiences a clear divide in levels of stigma experienced at different locations around the world.	Yes: The EU (Syngenta, Bayer, and BASF) experiences more local stigma than the U.S. (Monsanto, Dow, DuPont). This allows for the examination of the affects of global headquarters location.
3. Big Six: Industry that is characterized by biggest firms where some operate in only one single stigmatized industry, while others operate in both a stigmatized and a non-stigmatized industry.	Yes: Monsanto and Syngenta (Single Category). Dow, DuPont, Bayer, BASF (Multiple Categories). This allows for the examination of category membership affects on organizational stigma strategic responses.
4. Publically Traded: Industry concentrated in a number of top firms that are all publicly traded and where all public disclosure documents could be obtained.	Yes: Big Six firms are all publicly traded. Allows us to gain access to relevant documents available.

Source: Own Elaboration

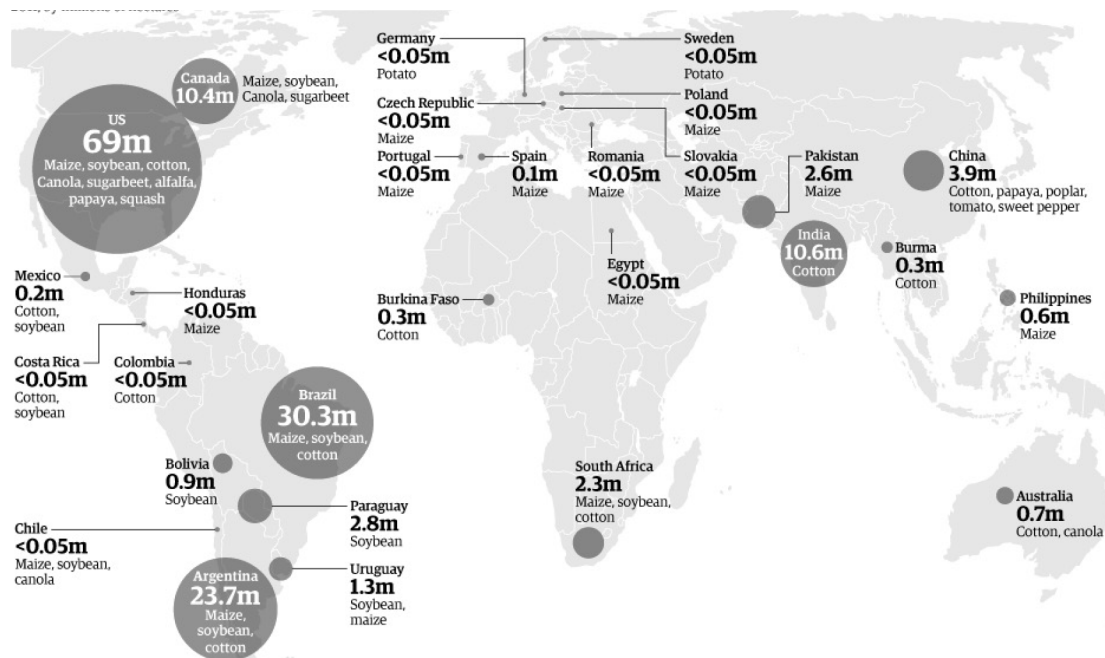
Industry Relevance

First, the world market for agricultural and food biotechnology is growing every year (Lucht, 2015), it is evolving quickly (Lucht, 2015) and it is an industry which operates internationally. See *Figure 3: Global Area of Commercial Biotech Crops (2011)* for an illustration of the locations around the world where GM crops are grown (Allen, Feb 9 2012). Despite the fact

⁵⁹ This industry is also known as the agrichemicals industry (Lawrence, Oct 2 2016); agrochemicals industry (Stevenson, Jul 18 2003); agricultural chemical, pesticide and fertilizer industry (EPA-NSCEP, 2000), genetically modified food industry; crop protection technology industry (CropLife, 2017); Plant Science industry (CropLife, 2017); plant biotechnology industry (Hunter, Jun 2011); Green biotechnology (Oakley, 2005).

that companies around the world use GMOs, the majority of GM crops are grown in the U.S., Brazil, Argentina, India and Canada (Allen, Feb 9 2012). Moreover: “97% of edible GMOs among cultivated GMOs (soy, corn and oilseed rape or canola, excluding cotton) are grown in South and North America (De Vendômois, Cellier et al., 2010, p. 590).” In addition: “Globally, 82% of the total crop area for soybeans, 68% for cotton, 30% for maize and 25% for oilseed rape were planted with GM varieties in 2014 (James, 2014)” (Lucht, 2015, p. 4255).

Figure 3: Global Area of Commercial Biotech Crops (2011)



Source: Allen (Feb 9 2012)

GMOs are being used by many companies in their food production worldwide and people unknowingly consume them every day (Sarich, 2014). Examples of companies which use GMOs in their production include Kraft, General Mills, and Kellogg's (Sarich, 2014). According to a Consumer Report⁶⁰ Study conducted in 2015, they found: “[...] GMOs were present in many packaged foods, such as breakfast cereals, chips, baking mixes, and protein bars” (CR, Feb 26, 2015). They also found that in the majority of their samples (including only products that did not make non-GMO claims), that “nearly all” were found to “contain substantial amounts of GM corn or soy. They included many familiar foods, such as Kellogg's Froot Loops, General Mills Corn Chex, Jiffy Corn Muffin Mix [...]” (CR, Feb 26, 2015). Food companies that heavily use GMOs as

⁶⁰ Consumer Reports is a nonprofit organization providing unbiased product ratings and reviews since 1936.

ingredients for their products, such as Coca-Cola, PepsiCo, Kellogg's, Kraft Heinz, General Mills, and Land O'Lakes spent a lot of money lobbying against food labeling legislation in the U.S. for bill S. 764⁶¹ (Addady, Jul 31 2016; Scipioni, Aug 5 2015). Moreover, Alliance for Natural Health (ANS) researchers have found that: "Americans are consuming glyphosate⁶² in common foods on a daily basis" (Gillam, Apr 19 2016).

In addition to the growing prevalence of the global seed and agrochemical industry, this industry is currently undergoing vast consolidation (Moss, 2016), and therefore it is a relevant sector for the business and academic community as consolidation triggers changes in its landscape. The third wave of major consolidation in the industry is presently underway (Johnson, Sep 20 2016) with the proposed mergers of Bayer and Monsanto, Syngenta and ChemChina, and DuPont and Dow (Johnson, Sep 20 2016). More specifically, Diana Ross, president of the American Antitrust Institute (AAI) (Moss, 2016, p. 2) stated that:

In 2014, the ranking of the Big 6 in total global agriculture-related revenue was: Monsanto (\$16 billion), Syngenta (\$14 billion), Bayer (\$12 billion), DuPont (\$11 billion), Dow (\$7 billion) and BASF (\$7 billion). The proposed merger of Dow and DuPont would combine the 4th and 5th largest rivals. A Monsanto-Bayer combination would combine the 1st and 3rd largest firms. The two mergers together would therefore create the Big 4, dominated by a Monsanto-Bayer and Dow-DuPont duopoly with almost 70% of the global market.

Market concentration in this sector has been increasing over time (Fuglie, Heisey et al., Dec 2011, p. 15). See *Table 10: Market Concentration*. The factors motivating consolidation include: "[...] acquisition of complementary technology and marketing assets, economics of scale in crop biotechnology R&D" (Fuglie, Heisey et al., Dec 2011, p. 16). As illustrated in *Table 10: Market Concentration in Global Agricultural Industries*, the 4-firm and 8-firm concentration ratio of firms in the crop protection chemicals and crop seed and traits industries have increased over time (Fuglie, Heisey et al., Dec 2011, p. 16).

⁶¹ Opponents call the S. 764 bill the DARK Act, short for "Denying Americans the Right to Know." This bill has been opposed by people who claim that digital labelling, as suggested by this bill discriminates against low income consumers (Addady, Jul 31 2016).

⁶² "The IARC Working Group's classification of glyphosate as "probably carcinogenic to humans" (Group 2A) is based on "limited" evidence of cancer in humans (from real-world exposures that actually occurred) and "sufficient" evidence of cancer in experimental animals (from studies of "pure" glyphosate). This classification is further supported by "strong" evidence for genotoxicity, both for "pure" glyphosate and for glyphosate formulations. The IARC Monographs evaluation is a hazard classification. It indicates the strength of evidence that glyphosate can cause cancer. The probability of developing a cancer will depend on factors such as the type and extent of exposure and the strength of the effect of the agent" (IARC, Mar 1 2016, p. 3).

Table 10: Market Concentration in Global Agricultural Industries⁶³

Year	Herfindahl Index ⁶⁴	4-Firm Concentration Ratio ⁶⁵	8-Firm Concentration Ratio
Share of Market %			
Crop Protection Chemicals			
1994	398	28.5	50.1
2000	645	41.0	62.6
2009	937	53.0	74.8
Crop Seed and Traits			
1994	17,143.1	21.1	29.0
2000	34,963.4	32.5	43.1
2009	991	53.9	63.4

Source: Modified from USDA, Economic Research Service Estimates based on firm-level sales and R&D expenditure data (Fuglie, Heisey et al., Dec 2011, p. 15).

Divisions in Stigma

It is an industry which has and continues to cause significant divisions between those who support it and those who oppose it (Cuite, Sep 21, 2015). Moreover, these divisions in opinion have clear geographical divisions (Lucht, 2015). In other words, the term GMO is a highly politicized one (Lucht, 2015; Schauzu, 2013) and one which has various cultural and environmental factors impacting public acceptance (Cuite, Sep 21, 2015). The industry experiences a clear division of public opinion on a global level (ex. Europe vs. U.S.). The U.S. has less stringent regulations on GM technology and the industry is less stigmatized in the U.S. (Lucht, 2015). In comparison, Europe experiences very stringent GMO regulations (Lucht, 2015; Raybould & Poppy, 2012; Varzakas, Arvanitoyannis et al., 2007) with the public being much more critical and stigmatizing this sector to a greater extent. In Europe, the only approved crop for cultivation is Maize MON 810⁶⁶ (Papademetriou, 2014). Since 2001, the EU has placed a de facto moratorium⁶⁷ on approvals of GMOs (Papademetriou, 2014). Lucht (2015, p. 4257) explains the politicization of GMOs in the EU acts in a way that: “[...] hampers the EU authorization process for biotech crops. On average, it takes at least 15 to 20 months longer than that in the U.S., Brazil, and Canada, the major feed exporters to the EU, with an increasing backlog.” Besides more

⁶³ “Larger index numbers correspond to more highly concentrated industries” (Rios, McConnell et al., 2013).

⁶⁴ Also known as Herfindahl-Hirschman Index (HHI) is a measure of Market Concentration. “It involves the sum of the squared market shares for all firms in the industry” (Rios, McConnell et al., 2013).

⁶⁵ The 4-firm concentration ratio is “The four-firm concentration ratio is the ratio of the sales of the four largest firms in the industry relative to total industry sales, expressed as a percentage” (Rios, McConnell et al., 2013).

⁶⁶ MON810 Bt- transgenic maize plant in an insect resistant plant (Lucht, 2015). In 2013 it was mostly cultivated in Spain and on a small scale in Portugal, the Czech Republic, Romania and Slovakia (EP, Oct 27, 2015).

⁶⁷ De facto is Latin for “in fact”, describes practices that exist in reality, even if not legally authorized. Moratorium is a temporary prohibition of an activity.

stringent regulations, activists in Europe have also been more powerful when it comes to GMO activist movements (Lucht, 2015, p. 4257). More precisely, Lucht (2015, p. 4257) states that activists in the EU: “[...] have been very successful in Europe in framing GMO as a threat to biodiversity, farmer autonomy, and food safety (Ansell, Maxwell et al., 2006; Doh & Guay, 2006).” Moreover, according to Lucht (2015, p. 4257), NGOs in Europe have come together with “green political parties and the organic movement” and have framed GMOs in terms of “potential risks and possible negative affects of GM food and feed. Their often-sensationalistic⁶⁸ campaigns were taken up and multiplied by media articles (Frewer, Miles et al., 2002).”

According to the Eurobarometer⁶⁹ 341 Report published in 2010: “[...] Europeans do not see benefits of genetically modified food, consider genetically modified foods to be probably unsafe or even harmful and are not in favor of the development of genetically modified food” (EC, 2010, p. 7). Moreover Falk, Chassy et al. (2002, p. 1384) state: “Most U.S. consumers are not aware of the extent that genetically modified foods have entered the marketplace. Consumer awareness of biotechnology seems to have increased over the last decade, yet most consumers remain confused over the science. Concern over the impact on the safety of the food supply remains low in the U.S., but is substantially elevated in Europe.”

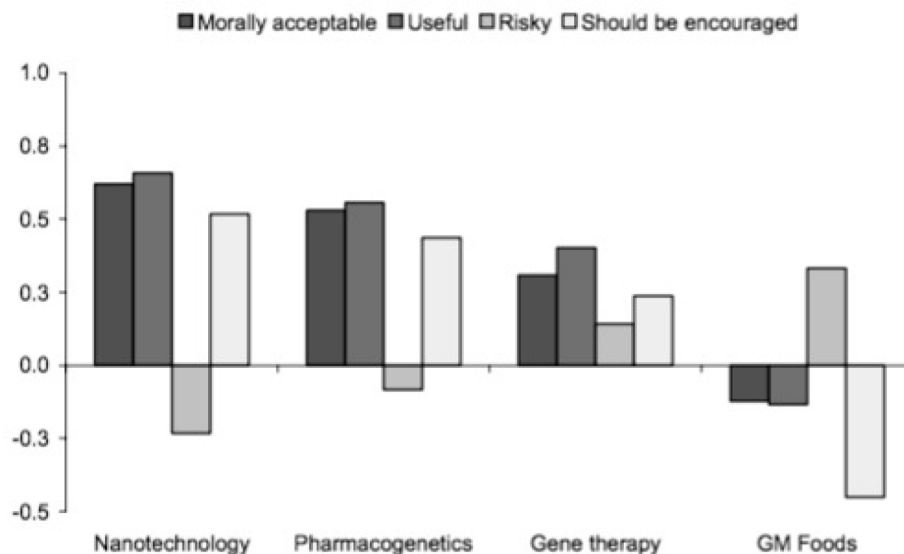
Research has also shown no improvement in consumer perception of GMOs in Europe over time (Delwaide, Nalley et al., 2015; INRA, Mar 15 2000). In fact, research has exposed that Europeans think GMOs are immoral and don't provide usefulness (Delwaide, Nalley et al., 2015; Gaskell, Stares et al., 2006). Wunderlich and Gatto (2015, p. 845) stated that: “whereas European aversion to GM goods is increasing dramatically over time and at a slower but still growing rate in the U.S., other parts of the world are becoming less resistant to GM foods based on changes in the percentage premium that consumers would pay for non-GM alternatives (Dannenberg, 2009).” Additionally, Myskja (2006) described the fact that Europeans perceive GMOs to be unnatural (Delwaide, Nalley et al., 2015), and research from Gaskell, Stares et al. (2006) show that Europeans see GM foods as less morally acceptable, less useful, riskier, and as a technology

⁶⁸ Sensational is defined as “arousing or tending to arouse (as by lurid details) a quick, intense, and usually superficial interest, curiosity, or emotional reaction” (Merriam-Webster, 2017w).

⁶⁹ Eurobarometer surveys monitor the evolution of public opinion in all 28 EU Member States. The aim is to assess EU citizens' awareness of and support for the European Union's activities. Tracing public opinion trends helps the preparation of policy, decision-making, and the evaluation of the EU's work” (ECHO, 2017).

that should be less encouraged when compared to nanotechnology⁷⁰, pharmacogenetics⁷¹, and gene therapy.⁷² See *Figure 4: Evaluation of Four Technologies in Europe (2006)*.

Figure 4: Evaluation of Four Technologies in Europe (2006)



Source : Gaskell, Staes et al. (2006, p. 17)

Contrary to the position of Europeans, U.S. consumers and farmers have embraced GM technologies to a much greater extent (Lucht, 2015). More specifically, Americans had little concern regarding GM technology when it first entered the market in 1996 (IFIC, 2006). More precisely according to the IFIC:

When the first GM crops began to be grown on a large scale in the USA starting in 1996, farmers embraced them and products rapidly penetrated the markets for feed and food. The U.S. authorities had adopted a quite permissive approval policy for GM food products, and have not required GM labeling (Bernauer & Meins, 2003). Additionally, in the years following their introduction, the majority of U.S. consumers expressed little to no concern about food and agricultural biotechnology, and were likely to buy food products produced from GM plants, although consumer awareness and knowledge about GM food was superficial (IFIC, 2006).

⁷⁰ Nanotechnology is “the science of manipulating materials on an atomic or molecular scale especially to build microscopic devices (such as robots)” (Merriam-Webster, 2017q).

⁷¹ Pharmacogenetics is “the study of how genetic differences among individuals cause varied responses to a drug” (Merriam-Webster, 2017t).

⁷² Gene therapy is “the insertion of usually genetically altered genes into cells especially to replace defective genes in the treatment of genetic disorders or to provide a specialized disease-fighting function” (Merriam-Webster, 2017m).

It is important to note that even though Europeans experience more controversy when it comes to GMOs, Americans still are not completely accepting of GM technology (Wunderlich & Gatto, 2015). Wunderlich and Gatto (2015, p. 845) stated:

U.S. consumers tend to accept GMOs more readily than European counterparts, with Europeans having higher willingness to pay for non-GMO foods than Americans, but meta-analyses of consumer behavior still show that consumers as a whole are willing to pay more for non-GM products than GMO products, with a willingness to pay⁷³ an extra 29–45% more to avoid GM goods (Colson & Rousu, 2013; Dannenberg, 2009; Lusk, Jamal et al., 2005).

Big Six

This sector sets the perfect stage to investigate the affect of single or multiple category membership on choice of strategic response to stigma in stigmatized industries. This is due to the fact that some of the big Six firms in this sector are also diversified with business in other chemical businesses, while others are not diversified. BASF, Bayer, Dow and DuPont are diversified (multiple category membership firms), while Monsanto and Syngenta are non-diversified (single category membership firms). This means that an interesting investigation into the affects of category membership on strategic response to stigma can be conducted, as well as the affects of stigma at global headquarters location. In other words, this industry is dominated by six firms on a global level who are either diversified as a general chemical company (multiple category membership) or non-diversified only operating in the seed and agrochemical industry (single category membership). Moreover, these six firms either have global headquarters location in area of lower stigma (U.S.), or higher stigma (E.U.).

Publically Traded

Fourthly, the global seed and agrochemical industry is concentrated in a number of top firms which are all publicly traded and where all necessary reports could be obtained for analysis.

3.2.2 Choice of Time Period

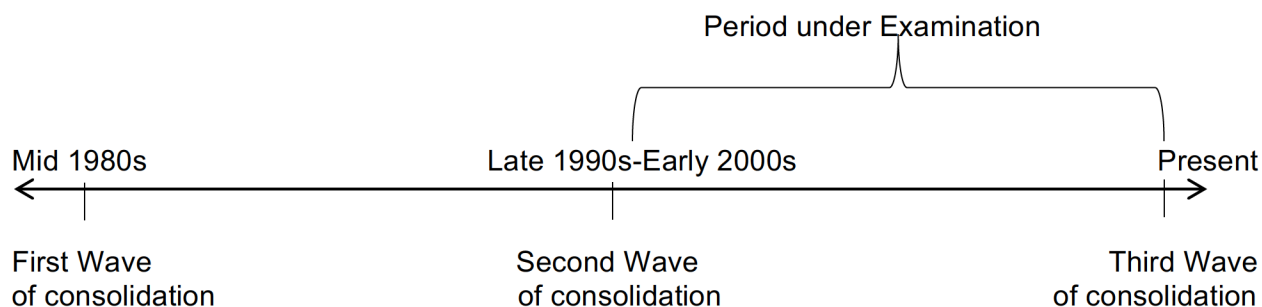
The time period under investigation of 2000–2015⁷⁴ was chosen for a few fundamental reasons. The global seed and agrochemical industry has undergone two waves of consolidation (Moss, 2016). These two waves occurred during the (1) mid-1980s and (2) during the late 1990s

⁷³ “Economists, psychologists, and marketing researchers rely on measures of consumers’ willingness to pay (WTP) in estimating demand for private and public goods and in designing optimal price schedules” (Wertenbroch & Skiera, May 2002).

⁷⁴ At the time of data collection and analysis, the 2016 annual reports were not available. It was later determined that 2016 annual reports did not need to be consulted, as the results found were sufficient to draw propositions.

to early 2000s (Moss, 2016). My analysis begins after the end of the second wave of consolidations during which the Big Six firms emerged, in the 15 years between 1985 and 2000, “the Big 6 firms—Monsanto, Syngenta, Bayer, DuPont, Dow and BASF—acquired about 75 percent of small to medium-size enterprises engages in biotechnology research” (Moss, 2016, p. 2). See *Figure 5: Period under Investigation*.

Figure 5: Period under Examination



Source: Own Elaboration based on information from Moss (2016).

At the end of the 1990s, a trend was occurring where companies in biotechnology and food were joining forces in the pursuit of or anticipation of the creation of “nutraceuticals⁷⁵.” (Reinhardt & Shelman, Jan 5 2015, p. 2). Consolidations were occurring in order to take advantage of synergies (Howard, 2009). However, despite this life sciences boom: “[...] consumer applications were slow to develop. Strong European push back against genetically modified foods, in combination with low agricultural commodity prices, led to difficult times and significant industry restructuring” (Reinhardt & Shelman, Jan 5 2015, p. 2). Eventually, some companies split off and focused on global seed and agrochemical, namely, Monsanto and Syngenta. The third wave of consolidation is currently underway (Moss, 2016).

3.2.3 Choice of Cases

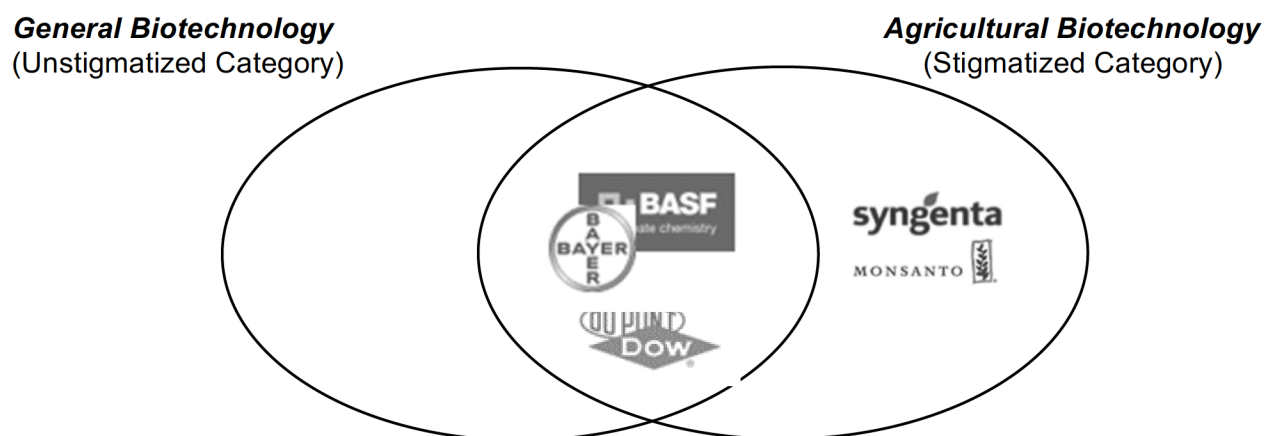
My research focuses on discovery and not hypothesis testing. Therefore, intentional theoretical sampling is conducted in order to “illumine and extend relationships and logic among constructs” and the “elaboration of emergent theory” (Eisenhardt & Graebner, 2007, p. 27). This study focuses on large firms at the top of the industry which are publicly traded. Looking at publicly traded firms allows access to necessary archival data. As previously stated, the Big Six firms

⁷⁵ Nutraceuticals is defined as “a specially treated food, vitamin, mineral, herb, etc., that you eat or drink in order to improve your health” (Merriam-Webster, 2017r).

under investigation include the following: BASF, Bayer, Dow Chemical⁷⁶, DuPont, Syngenta and Monsanto. ChemChina, although a major player in the global seed and agrochemical sector, has been omitted from the analysis as China National Chemical Corporation is a state-owned enterprise with inadequate public information.

The six cases under investigation include four diversified companies (BASF, Bayer, Dow Chemical and DuPont) with activities in multiple categories, i.e. activities in both the global seed and agrochemical industry as well as activities in other non-stigmatized industries. The other two cases involve Monsanto and Syngenta which are non-diversified firms that operate in solely one stigmatized category. See *Figure 6: Diagram of Cases under Investigation*.

Figure 6: Diagram of Cases under Investigation

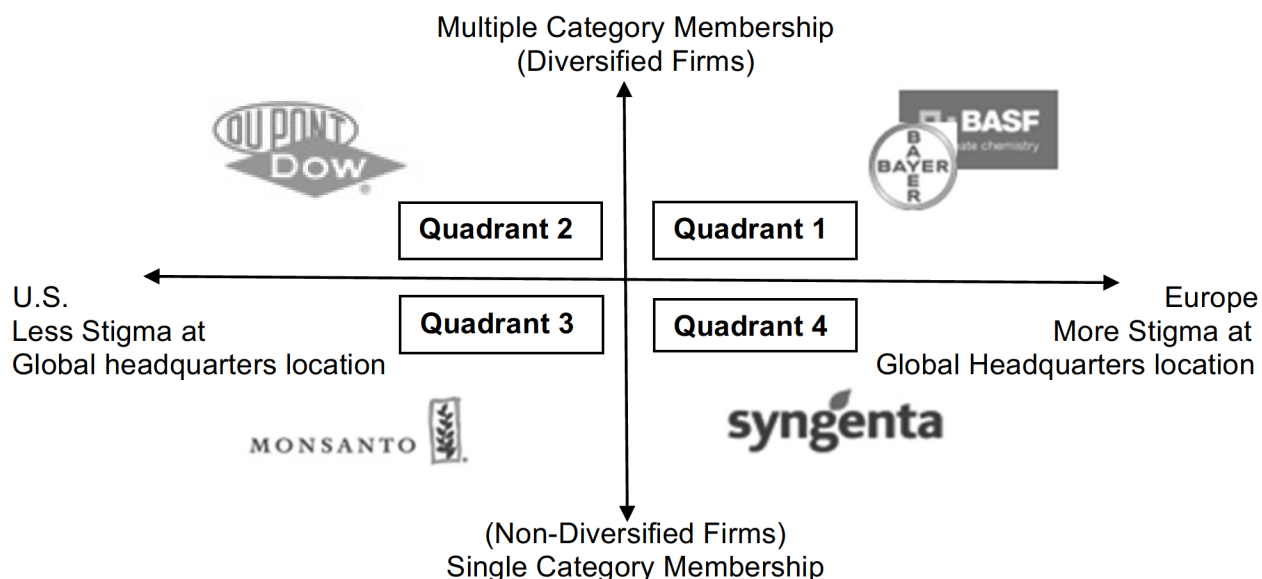


Source: Own Elaboration⁷⁷

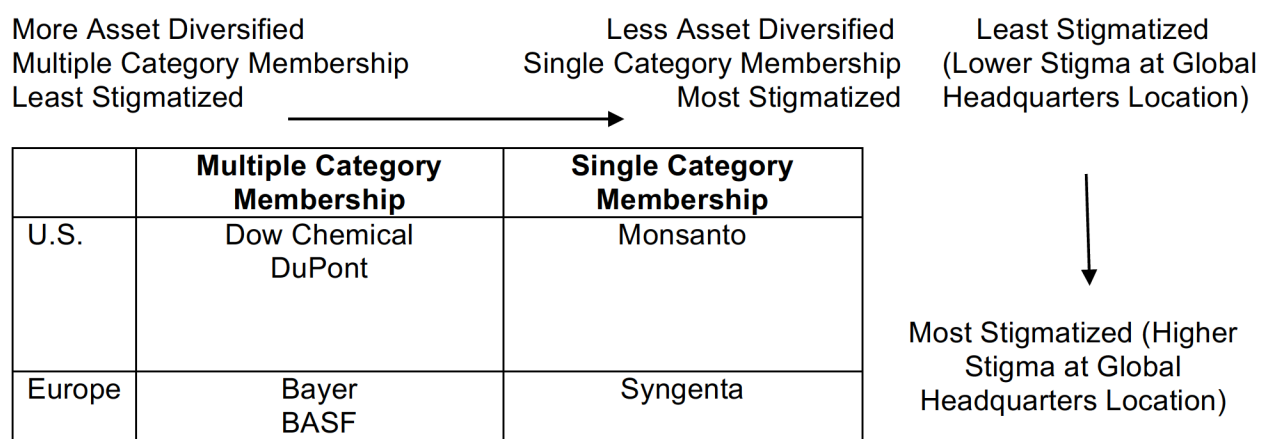
Moreover, the companies selected differ in global headquarters location, being in either Europe (location of higher stigma), or the U.S. (location of lower stigma). Dow Chemical, DuPont and Monsanto have global headquarters in the U.S., while BASF, Bayer and Syngenta have global headquarters in Europe. See *Figure 7: Case Studies under Investigation I* and *Figure 8: Case Studies under Investigation II*.

⁷⁶ "Dow Chemical" and "Dow" will be used interchangeably to refer to the "Dow Chemical Company."

⁷⁷ Company logos obtained from corporate websites.

Figure 7: Case Studies under Investigation I

Source: Own Elaboration

Figure 8: Case Studies under Investigation II

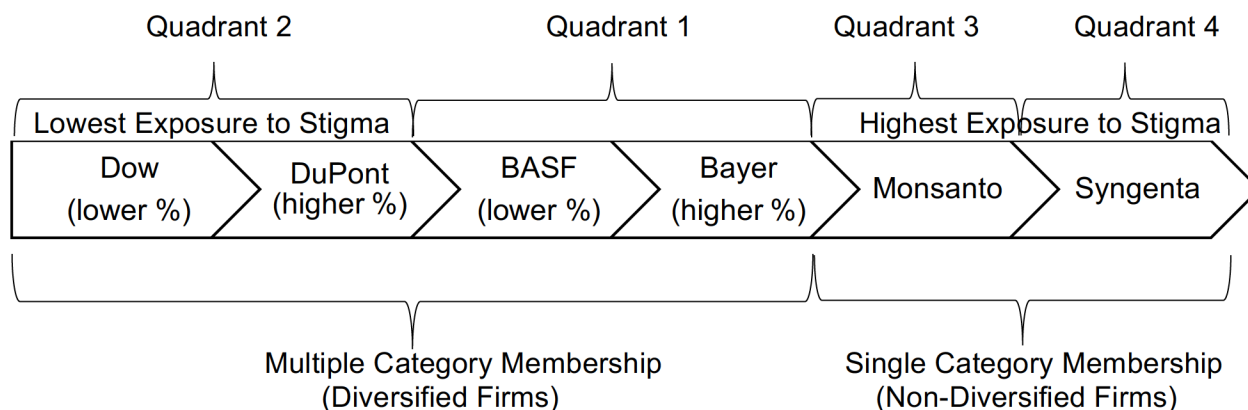
Source: Own Elaboration

Another notable difference in stigma exposure is the percentage of sales in agriculture within each quadrant. See *Figure 9: Exposure to Stigma*. Within quadrants 1 and 2, the firms with the lowest percentage of sales in agriculture are the least exposed to stigma within each quadrant, and vice versa. The assumption is that the firms with the highest percentage of sales in agriculture face more hostile audiences⁷⁸ than the ones with lower percentages. Another assumption is that

⁷⁸ The assumption is that firms with highest exposure to stigma face more hostile audiences. This term was used by Hudson and Okhuysen (2009), Tracey and Phillips (2016) and Vergne (2012).

the location of global headquarters is more important than the percentage of sales in agriculture for the determination of level of exposure to stigma. See *Figure 13: Theoretical Sampling Logic—Level of Stigma Exposure of the Big Six firms*, for an alternative representation.

Figure 9: Exposure to Stigma



Source: Own Elaboration

In other words, exposure to stigma is determined by three determinants. See *Figure 10: Theoretical Sampling Logic—Level of Stigma Exposure of the Big Six firms*. Determinant 1 involves Category Membership is the first level of division for differences in stigma exposure. Determinant 2 involves Global Headquarters Location is the second level of division for differences in stigma exposure. Determinant 3 involves % of sales in agriculture (Percentage of sales in agriculture in 2015) and is the third level of division for differences in stigma exposure. The breakdown of firms from highest to lowest exposure to stigma is as follows:

1. **Syngenta:** Syngenta has the highest exposure to stigma among the Big Six firms.
2. **Monsanto:** Monsanto has the 2nd highest exposure to stigma among the Big Six firms.
3. **Bayer:** Bayer has the 3rd highest exposure to stigma among the Big Six firms. It is ranked higher than BASF (even though they are part of the same quadrant as Bayer has higher % sales in agriculture⁷⁹ than BASF).
4. **BASF:** BASF has the 4th highest exposure to stigma among the Big Six firms. It is ranked lower than Bayer (even though they are part of the same quadrant as BASF has lower % sales in agriculture⁸⁰ than Bayer).

⁷⁹ % of sales in agriculture as of 2015; However, from 2000 – 2015, Bayer consistently had higher % of sales in Agriculture when compared to BASF.

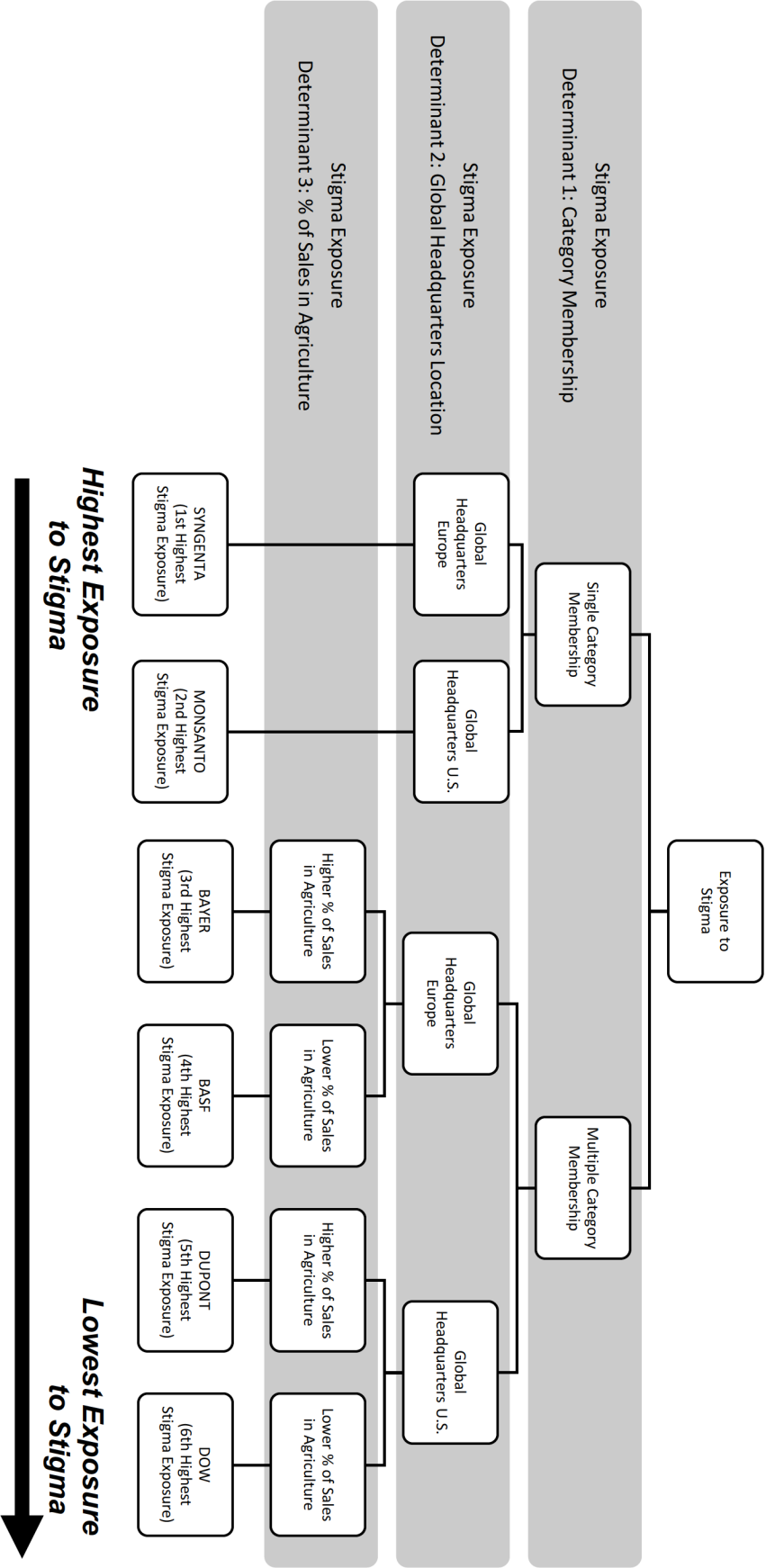
⁸⁰ % of sales in agriculture as of 2015; However, from 2000 – 2015, BASF consistently had lower % of sales in Agriculture when compared to Bayer.

5. **DuPont:** DuPont has the 5th highest exposure to stigma among the Big Six firms. It is ranked higher than Dow (even though they are part of the same quadrant as DuPont has higher % sales in agriculture⁸¹ than Dow).
6. **Dow:** Dow has the 6th highest exposure to stigma among the Big Six firms. It is ranked lower than DuPont (even though they are part of the same quadrant as Dow has lower % sales in agriculture⁸² than DuPont).

⁸¹ % of sales in agriculture as of 2015; However, from 2000 – 2015, DuPont consistently had higher % of sales in Agriculture when compared to Dow.

⁸² % of sales in agriculture as of 2015; However, from 2000 – 2015, Dow consistently had lower % of sales in Agriculture when compared to DuPont.

Figure 10: Theoretical Sampling Logic—Level of Stigma Exposure of the Big Six firms⁸³

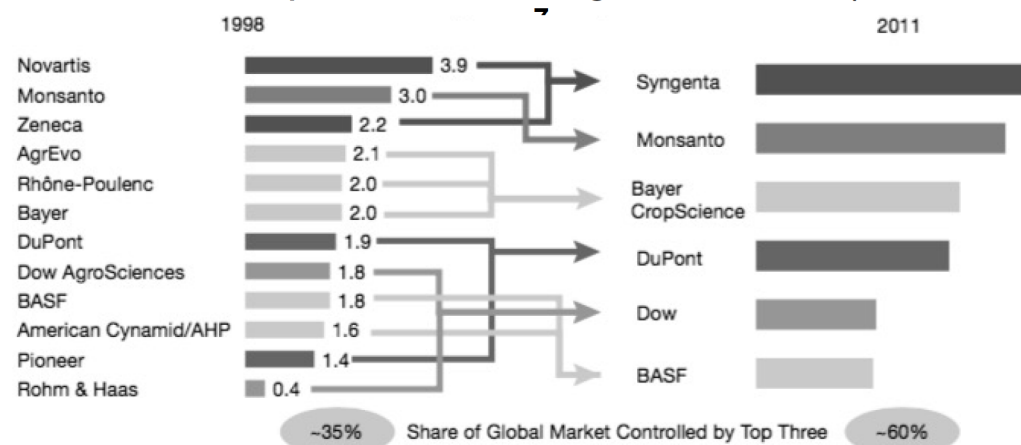


Source: Own Elaboration

⁸³ Determinant 1: Category membership is the first level of division for differences in stigma exposure.
Determinant 2: Global headquarters location is the second level of division for differences in stigma exposure.
Determinant 3: % of sales in agriculture (Percentage of sales in agriculture in 2015) is the third level of division for differences in stigma exposure.

See Figure 11: Revenue from Crop Protection, Including Seeds and Traits (Euros in Billions), which shows the Big Six firms in terms of their revenue in 2011. As shown in Figure 11, in 2011, the Big Six firms from largest to smallest revenue in crop protection include: Syngenta, Monsanto, Bayer, DuPont, Dow and BASF.

Figure 11: Revenue from Crop Protection, including Sales and Traits (Euros in Billions)



Source : Morawietz, Thiedig et al. (2013, p. 9)

See Table 11: The Big Six Agricultural Chemical Companies. This table compares the Big Six firms in terms of 2015 sales in both seeds and biotech and in agricultural chemicals. As the table shows, Syngenta and Bayer have the highest sales in agricultural chemicals, and Monsanto and DuPont have the highest sales in seeds and biotechnology.

Table 11: The Big Six Agricultural Chemical Companies

Company	Country	2015 Sales (\$millions)		Proposed Merger Partner
		Seeds and Biotech	Agricultural Chemicals	
BASF	Germany	Small	6,211	None
Bayer	Germany	819	9,548	Monsanto
Dow Chemical	U.S.	1,409	4,977	DuPont
DuPont	U.S.	6,785	3,013	Dow Chemical
Monsanto	U.S.	10,243	4,758	Bayer
Syngenta	Switzerland	2,838	10,005	ChemChina

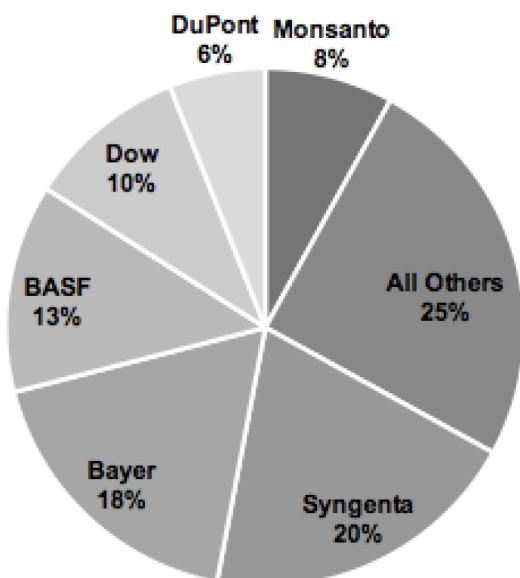
Note: BASF does not separately report seed sales, placing them under an “other” category.

Source: USDA, Economic Research Service using data from Company Annual Reports. (MacDonald, Apr 3 2017)

Other illustrative diagrams comparing the activities of the Big Six firms are found in Figure 11: Big Six Global Agrochemical Market Share (2013 sales), and Figure 12: Big Six Global Seed Market Share (2013 Sales). These diagrams show the market share of the Big Six firms in

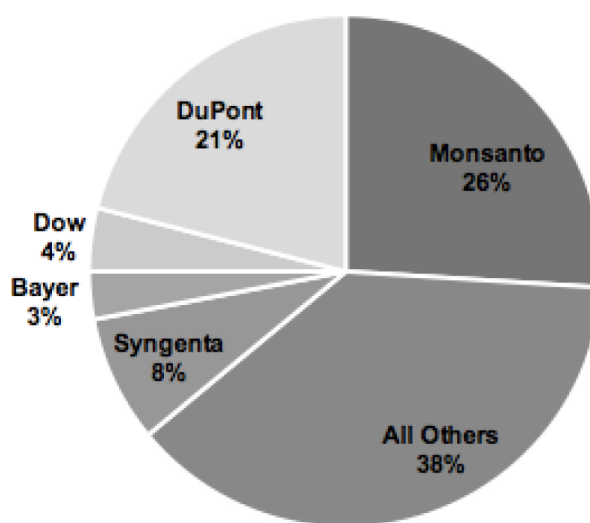
terms of global agrochemical market share and the global seed market share in terms of 2013 sales. *Figure 12* shows that Syngenta (20%) has the highest share (among the Big Six) in agrochemicals and *Figure 13* depicts the global seed market share with Monsanto (26%) having the highest share (among the Big Six). Moreover, *Table 12: Big Six Firms data*, summarizes other important differences between these firms and *Table 13: Characteristics of the Firms under Investigation* shows additional characteristics of the Big Six firms under investigation.

Figure 12: Big Six Global Agrochemical Market Share (2013 Sales)



Source: ETCGroup (2015)

Figure 13: Big Six Global Seed Market Share (2013 Sales)



Source: ETCGroup (2015)

Table 12: Big Six Firms Data⁸⁴

Firm	Country of Incorporation	Sector of R&D Activity	2007 Data			2009 Data			
			Agriculture R&D Spending	Principal Agriculture R&D Locations	Crop seed & biotech sales	Agri-chemical sales	Non Agri-chemical & R&D	Pharma sales and R&D	Agri-biotech Research
BASF	Germany	Agrichemical, crop seed, animal nutrition	655	Germany, U.S., India	Small	5,065	Primary product	Divested 2000	100% of crop R&D
Bayer	Germany	Agrichemical, crop seed, animal nutrition	978	Germany, France, Belgium, Netherlands, U.S., Japan	699	7,535	No	Human and animal health	>85% of crop R&D
Dow	U.S.	Agrichemical, crop seed	294–380	U.S., Japan, Argentina, Puerto Rico	633	3,708	Primary product	Divested 1996	>85% of crop R&D
DuPont	U.S.	Agrichemical, crop seed, food ingredients	633	U.S., France, Japan, India	4,806	2,320	Primary product	Divested 2001	>50% of crop R&D
Monsanto	U.S.	Agrichemical, crop seed	770	U.S., France, Brazil, Argentina, India, Australia	7,297	3,527	Divested 1997	Divested 2000	>80% of crop R&D
Syngenta	Switzerland	Agrichemical, crop seed	830	Switzerland, UK, U.S., China, Australia	2,564	8,491	Divested 1996	Divested 20,000	>15% of crop R&D

Sources : USDA, Economic Research Service (Fuglie, Heisey et al., Dec 2011, p. 19)

⁸⁴ Sales reported in millions USD \$

Table 13: Characteristics of the Firms under Investigation

	BASF	Bayer	Dow	DuPont	Monsanto	Syngenta
Global Headquarters Location	Ludwigshafen, Germany (Europe)	Leverkusen, Germany (Europe)	Midland, Michigan (U.S.)	Wilmington, Delaware (U.S.)	St. Louis, Missouri (U.S.)	Basel, Switzerland (Europe)
Category Membership	Multiple	Multiple	Multiple	Multiple	Single	Single
Stigma at Headquarters Location	High	High	Low	Low	Low	High
Level of Stigma Exposure	4 ⁸⁵	3 ⁸⁶	6 ⁸⁷	5 ⁸⁸	2 ⁸⁹	1 ⁹⁰
Company Sales (2016)	€57,550 million	€46,769 million	\$48,158 million	\$ 24,594 million	\$13,502 million	€12,790 million
Agricultural Sales (2016)	€5,569 million	€9,915 million	\$6,174 million	\$ 9,516 million		
Percentage of Sales in Agriculture (2016)	10%	21%	13%	39%	100%	100%
Company Wide R&D Budget (2016)	€1,863 million	€4,666 million	\$1,584 million	\$ 1,641 million	\$1,512 million	€1,300 million
Agricultural R&D Budget (2016)	€489 million	€1,164 million	NA ⁹¹	NA		
Percentage of R&D budgets dedicated to Agriculture (2016)	26%	25%	NA	NA	100%	100%

Source: Own Elaboration with information obtained from 2016 Company Annual Reports: BASF (2016a), Bayer (2016), Dow (2016b), DuPont (2016a), Monsanto (2016), Syngenta (2016)⁹².

⁸⁵ BASF has fourth highest exposure to stigma due to: (1) multiple category membership, (2) Headquarters Location in Europe and (3) Lower percentage of sales in Agriculture when compared to Bayer.

⁸⁶ Bayer has third highest exposure to stigma due to: (1) Multiple category membership, (2) Headquarters Location in Europe, and (3) Higher percentage of sales in Agriculture when compared to BASF.

⁸⁷ Dow has the lowest exposure to stigma due to: (1) multiple category membership, (2) Headquarters Location in U.S., and (3) Lower percentage of sales in Agriculture when compared to DuPont.

⁸⁸ DuPont has fifth highest exposure to stigma due to: (1) Multiple category membership, (2) Headquarters location in U.S. and (3) Higher percentage of sales in Agriculture when compared to Dow.

⁸⁹ Monsanto has second highest exposure to stigma due to: (1) Single category membership, but (2) Headquarters Location in U.S.

⁹⁰ Syngenta has highest exposure to stigma due to: (1) Single category Membership, and (2) Headquarters Location in Europe.

⁹¹ NA represent Information not available.

⁹² All company Annual Reports obtained from Corporate Websites in January, 2017.

3.3 Data Analysis Procedure

This section describes the method of data analysis. My case study research method was taken from Yin (1989), Yin (2003) and Yin (2013). After the research design phase was complete, six individual case studies were conducted. I then proceeded to complete the cross-case analysis. In what follows, a more detailed explanation of each step is outlined. See *Table 14: Methodological Steps Overview*.

Table 14: Methodological Steps Overview

<i>Step 1 Data Collection and Organization</i>	1-A: Data collection and research on industry
	1-B: Data organization into MaxQDA⁹³ files
<i>Step 2 Individual Case Analysis</i>	2-A: Analysis of basic company information and strategy
	2-B: Analysis of Strategic Responses to Stigma <ul style="list-style-type: none"> • 2-B.1: First-order Categories development: Involves using open coding. Initial concepts identified and grouped together into first-order categories (Tracey & Phillips, 2016, p. 745) • 2-B.2: Second-order Themes development: Involves using axial Coding. This process involves relating first-order codes to one another using both inductive and deductive thinking in order to come up with second-order themes (Tracey & Phillips, 2016, p. 745) • 2-B.3: Overarching Theoretical Dimensions development: Involves grouping the second-order themes into overarching theoretical dimensions (Tracey & Phillips, 2016, p. 745). • 2-B.4: Tabulation of Coded Segments: Involves the use of both strategy frequency table and strategy summary table. <ul style="list-style-type: none"> 2-B.4.1: Step 1—Summation of the presence (1) or absence (0) of each 2nd-order theme for each year from 2000 - 2015. 2-B.4.2: Step 2—Converting score to/100 for each first-order category using summation of each second-order theme under each first-order category. 2-B.4.3: Step 3—Assigning Very High (81–100%), High (61–80%), Moderate (41–60%), Low (21–40%), and Very Low (0–20%), for the use of each strategy (of first-order category).
<i>Step 3 Cross Case Synthesis</i>	3: Cross-case analysis of Strategic Responses to Stigma
<i>Step 4 Theoretical Model Development</i>	4: Theoretical Model Development

Source: Own Elaboration

⁹³ MAXQDA is a professional software for qualitative, quantitative and mixed methods data analysis (MAXQDA, 2017)

3.3.1 Step 1: Data Collection and Organization

(1) Step 1-A: Data collection and research on industry

The first step of my analysis involved the collection of data on the Big Six firms over time and research on the industry. This was done in order to get a sense of the industry and the companies involved. A total of 243 documents were collected for a total of approximately 33,000 pages. See *Table 15: Data Archival Documents*. Data used for this thesis was taken from secondary sources and involves five different types of documents. These include the following:

- (1) Annual Reports;
- (2) Corporate Social Responsibility Reports (CSR);
- (3) Integrated Reports⁹⁴;
- (4) Form 10-K for U.S. domestic companies⁹⁵;
- (5) Form 20-F Reports for U.S. foreign Issuers⁹⁶;

All secondary documents used were downloaded from the internet. The relevant documents were found using multiple sources, such as websites, and databases. Corporate social responsibility reports were collected via the corporate website, and when the information was not available on the corporate website, Corporate Register Database⁹⁷ was used. Corporate Register was used in CSR studies by Hąbek and Wolniak (2016) and Grougiou, Dedoulis et al. (2016). For Annual Reports and Integrated Reports, the firms' website was consulted first, and if not found on the websites, the ProQuest Historical Annual Reports⁹⁸ database was used to obtain the documents. If the reports were still not found using this database, the Zone Bourse⁹⁹ and Annual Reports¹⁰⁰ websites were consulted. Both the ProQuest Historical Annual Reports and Corporate Register databases were made available to me as a student at HEC Montréal. Form 10-K and Form 20-F reports were found on the SEC website or company websites.

⁹⁴ Integrated Reports are reports that include corporate social responsibility reporting and annual financial reporting in an integrated fashion.

⁹⁵ Form 10-K reports are yearly mandatory filings for U.S. domestic Issuers for the U.S. Securities and Exchange Commission. The annual report on Form 10-K provides a comprehensive overview of the company's business and financial condition and includes audited financial statements" (SEC, Jun 26 2009).

⁹⁶ Form 20-F reports are yearly mandatory filings for U.S. Foreign Issuers for the U.S. Securities and Exchange Commission (SEC) for companies listed with an American Exchange. A company is only eligible to file a 20-F if less than 50% on the shares are traded on the US exchange, once they breach that threshold then the company must file the same statements as a US company (10K, 10Q, 8K etc.)."

⁹⁷ Corporate Register is a global online directory of corporate responsibility (CR) reports past and present.

⁹⁸ ProQuest Historical Annual Reports makes company annual reports from 1844.

⁹⁹ Zone Bourse webpage: <http://www.zonebourse.com>

¹⁰⁰ Annual Reports webpage: <http://www.annualreports.com>

Table 15: Data Archival Documents

Document Type	# Docs	# Pages
BASF Annual Reports (2000–2002)	3 ¹⁰¹	492
BASF Corporate Social Resp. Reports (2000–2002)	5 ¹⁰²	296
BASF Integrated Reports (2003–2015)	12 ¹⁰³	2,983
BASF Form 20-F (2000–2006)	7 ¹⁰⁴	1,680
BASF Total	27	5,451
Bayer Annual Reports (2000–2012)	13 ¹⁰⁵	2,728
Bayer Corporate Social Resp. Reports (2004–2012)	9 ¹⁰⁶	989
Bayer Integrated Reports (2013–2015)	3	1,052
Bayer Form 20-F (2002–2007)	6 ¹⁰⁷	1,717
Bayer Total	31	6,486
Dow Chemical Annual Reports (2000–2015)	17 ¹⁰⁸	2,131
Dow Chemical Corporate Social Resp. Reports (2000–2015)	16	1,218
Dow Chemical Form 10-K (2000–2015)	16	2,938
Dow Chemical Total	49	6,287
DuPont Annual Reports (2000–2015)	16	363
DuPont Corporate Social Resp. Reports (2000–2008, 2010–2015)	15	495
DuPont Form 10-K (2000–2015)	16	2,263
DuPont Total	47	3,121
Monsanto Annual Reports (2000–2015)	16	1,546
Monsanto Corporate Social Resp. Reports (2000–2001, 2005–2015)	16 ¹⁰⁹	989
Monsanto Form 10-K (2000–2015)	16	3,268
Monsanto Total	48	5,803
Syngenta Annual Reports or Integrated Reports (2000–2015)	16	2,220
Syngenta Corporate Social Resp. Reports (2002–2012)	11 ¹¹⁰	310
Syngenta Form 20-F (2002–2015)	14 ¹¹¹	3,900
Syngenta Total	41	6,430
Total	243	33,578

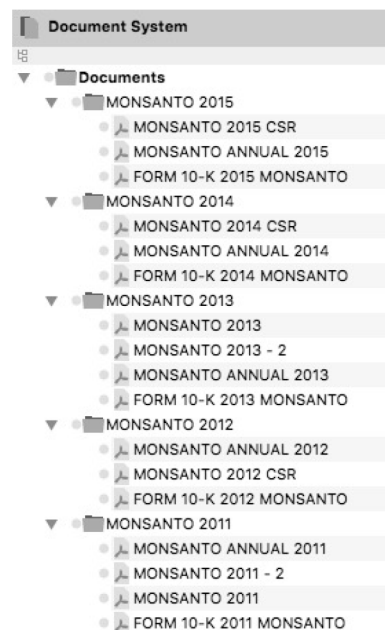
Source: Own Elaboration

¹⁰¹ From 2003 onwards, the company no longer filed stand-alone annual reports.¹⁰² From 2003 onwards, the company no longer filed stand-alone CSR reports. Some years had multiple reports.¹⁰³ Integrated annual and CSR reporting started in 2003.¹⁰⁴ As of September 6, 2007, BASF is no longer listed on the NYSE and cancelled its registration with the SEC. The deregistration became effective as of December 6, 2007, terminating Form 20-F obligations.¹⁰⁵ From 2013 onwards, the company no longer filed stand-alone annual reports.¹⁰⁶ From 2013 onwards the company no longer filed stand-alone corporate social responsibility reports. No corporate social responsibility reports were found for the years 2000–2003.¹⁰⁷ Until Bayer had filed for deregistration with NYSE on September 28, 2007, it was required to file an annual report, known as Form 20-F, with the SEC each year. Moreover, Form 20-F reports are not available from 2000 – 2001. Bayer stock has been traded under a OTC Level I ADR Program since September 27, 2007. Prior to that date Bayer had run a Sponsored Level II ADR Program, which started on January 24, 2002.¹⁰⁸ Some years had multiple reports.¹⁰⁹ No CSR report was found for years 2002–2004. Some years had multiple reports.¹¹⁰ CSR reports not found for 2000, 2001. Integrated CSR and Annual Report was used for 2013 – 2015.¹¹¹ The first Form 20-F reported with the SEC was filed in 2002 for the 2001 reporting year. However, 2001 report was not easily accessible via EDGAR website. Therefore, first report examined was filed in 2003 for the 2002 reporting period.

(2) Step 1-B: Data Organization.

All reports collected were uploaded into project files on MaxQDA¹¹². More precisely, all reports were imported into six separate MaxQDA project files; one for each company. Within each company project file, sixteen document folders were created: one for each year under investigation. Each folder year had all of the reports for the given year within them. See *Figure 14: Illustration of Document Organization*.

Figure 14: Illustration of Document Organization



Source: Own Elaboration

After all the data was collected and organized into MaxQDA folders, I proceeded to Step 2: Individual Case Analysis.

3.3.2 Step 2: Individual Case Analysis

In this step, following Eisenhardt (1989) recommendation, detailed case study reports were written for each company. These write-ups are descriptions of each case in question, and were performed to deal with the large amount of data obtained for each case (Eisenhardt, 1989).

(1) Step 2-A: Basic Company Information

This phase of my study involves conducting thorough research on each company in order to gain an understanding of what businesses they operate in, the location of their activities as well

¹¹² MAXQDA is a professional software for qualitative, quantitative and mixed methods data analysis.

as their corporate strategy. In order to conduct this analysis, information was found on databases, company websites, as well as other corporate reports. An analysis was also conducted in order to track the percentage of total sales for each company that comes from their agricultural activities. My individual case analyses use the recommendations made by Eisenhardt (1989, p. 540), that describe the within-case analysis as:

[...] the overall idea is to become intimately familiar with each case as a stand-alone entity. This process allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases. In addition, it gives investigators a rich familiarity with each case which, in turn, accelerates the cross-case comparison.

After a clear understanding for each firm in question and the industry as a whole was obtained, I proceeded to step 2-B: Analysis of Strategic Responses to Stigma.

(2) Step 2-B: Analysis of Strategic Responses to Stigma

In this step, an in-depth content analysis of different actions and moves were conducted. The first phase of my strategic responses to stigma analysis involved carefully reading all data collected. The computer-assisted qualitative data analysis software MaxQDA was used because it allowed me to organize my 33,000 pages of data in a systematic way and allowed me to study a larger number of cases than could have been done manually (Yin, 2013). Despite these advantages, I was careful in ensuring the broader context in which the data was found was closely examined in order to ensure proper coding and interpretation (Yin, 2013).

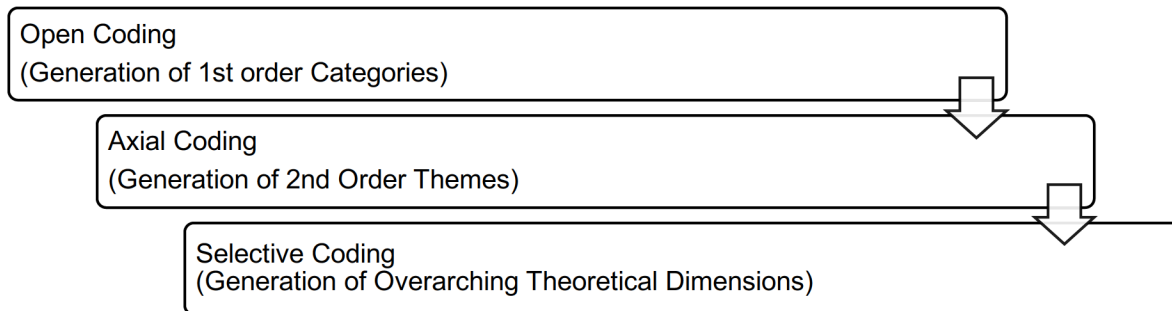
Two initial full readings were conducted whereby careful understanding of each report over 16 years for all six companies were conducted. Notes were then made using the notes function in MaxQDA on key words and themes discussed in these reports. I then compared the comments made for each company to look for differences and similarities. I also searched for information that was more emphasized by certain companies. My coding procedure was done in three steps. *See Figure 15: Coding Procedure.*

- (1) Step 1: Open Coding [First-order Categories Development]**—First, open coding was conducted which helped me generate my first-order categories (Tracey & Phillips, 2016). This is described in further detail in step 2-B.1.
- (2) Step 2: Axial Coding [Second-order Themes Development]**—Secondly, axial coding was conducted in order to generate the second order themes (Tracey & Phillips, 2016). This is described in further detail in step 2-B.2.

(3) Step 3: Selective Coding [Overarching Theoretical Dimensions Development]—

Thirdly, selective coding was done in order to come up with the overarching theoretical dimensions. This is described in further detail in step 2-B.3.

Figure 15: Coding Procedure



Source: Own Elaboration using information from Tracey and Phillips (2016).

Step 2-B.1- First-order Categories development

The first step involved an open coding process. The goal was to discover themes and subthemes of strategic responses to stigma. This was done by thoroughly examining the archival data and documentation. Attention was paid to affectively distinguish between core and peripheral themes and to build a hierarchy of themes. The MaxQDA text retrieval function was used. Open coding was defined by Douglas (2003, p. 49) as analysis of data whereby: “Codes form the basis for later aggregation into concepts (core codes). These are names or labels given by the researcher to events, activities, functions, relationships, contexts, influences, and outcomes. This initial coding involves the close scrutiny of the data.”

During the early phases of coding, all documents were searched and certain words were tagged for further analysis¹¹³. Search words based on the notes collected during the initial reading were used to tag important passages for further attention. These tagged words and groups of words are found in *Table 16: Tagged Words and Group of Words*. Throughout the data analysis, I ensured that my method was reliable and valid by keeping in mind the different criteria established by Yin (2013).

¹¹³ For a small number of older reports that were not text searchable with MaxQDA, MaxQDA's text retrieval search function could not be applied and therefore words were tagged manually.

My analytical procedure followed precisely what was done by Tracey and Phillips (2016) for their case study research on organizational stigma published in the AMJ¹¹⁴. These authors explain their method for coding in the following way: “We conducted an open coding process in which initial concepts were identified and grouped together into first-order categories. To do so, we examined each source of data [...] looking for similarities and differences between them. This was done inductively” (Tracey & Phillips, 2016, p. 745). My first-order categories are labeled A-N and can be found in *Table 17: Stigma Responses Coding*. The next step involves developing second order themes using axial coding.

Step 2-B.2—Second-Order Themes Development

This step involved the development of second order themes using axial coding. Axial coding is defined as: “Axial coding follows open coding. Once the initial open coding has been done, the researcher then regroups the data. Axial coding identifies relationships between open codes, for the purpose of developing core codes” (Douglas, 2003, p. 50). The procedure I adopted was the one used by Tracey and Phillips (2016, p. 745), who described their procedure in the following way:

[...] we relied on axial coding, a process in which first-order codes are related to one another using both inductive and deductive thinking (Strauss & Corbin, 1990). This enabled us to collapse the first-order categories that we had developed into a smaller group of second-order themes, and to more fully conceptualize the patterns in our data with respect to the dynamics of stigmatization. The process was iterative rather than linear, and involved moving among the data, the relevant literature, and the emerging patterns in order to refine the data into particular conceptual categories (Eisenhardt, 1989).

The process of axial coding led me to the development of my second-order themes, which are found in *Figure 17: Stigma Responses Coding*. The next step involves developing overarching theoretical dimensions using selective coding.

¹¹⁴ The Academy of Management Journal (AMJ) is ranked among the top five most influential and frequently cited management journals (ResearchGate, 2017).

Table 16: Tagged Words and Group of Words

1. Opinion	2. Agriculture, Agricultural, Agricultural Products, Agribusiness
3. Advocacy	4. Herbicide
5. Campaign, Campaigners	6. Genetic, Genetically, Genetically Modified, Genetically Modified Organisms, GMO, GMOs, gmoanswers ¹¹⁵ , genetically enhanced
7. Food and Agriculture Organization, FAO	8. Food, Food and Agriculture organization, Food Value Chain, food prod, food quality
9. Hectare	10. Biotech, Biotechnology, Agricultural Biotechnology
11. Claim	12. Interest group
13. Concern	14. International Fertilizer Industry Association
15. Label, Labeling	16. Controversy, Controversial
17. Crop Life Intern	18. Legislation
19. Market Acceptance	20. Crop, Crops, Crop Protection
21. Megatrend	22. Cross-pollination ¹¹⁶ , Adventitious Presence
23. Cultivation	24. Industry association
25. Defacto moratorium	26. Neonicotinoids ¹¹⁷
27. Delay, Delays	28. New technology, New technologies
29. Dialogue	30. Accept, Acceptance, Accepted
31. Discontinue	32. Partnership with the government
33. Education	34. Pesticide
35. Emotion	36. Plant, Plant Biotechnology, Plant Science
37. Environmental	38. Stringent Sustainable, Sustainable Farming, Sustainable Agri
39. Label, Labeling	40. Europe, European, European Union, EuropaBio ¹¹⁸
41. Public Acceptance	42. Farm, Farmer, Farming, Farming Method, Farmer safety,
43. Feed, Feeding	44. Regulation, Regulatory
45. Field crop	46. Resistance to
47. Population	48. Restriction, imposed a restriction
49. Insecticide	50. Safe, Safety, Safe use, Safe use training
51. Scientist	52. Food Safety, Food security
53. Informed	54. Seed, Seeds, Seed industry
55. Fungicide	56. Council for biotechnology acceptance
57. Sound science	58. Politic, Political, Politically
59. Global	60. Government, Governmental
61. Glyphosate	62. Thiamethoxam ¹¹⁹
63. Stringent	64. Train, Training, Teach, Teaching.
65. Grow, Grower	66. Unfavorable
67. Health risk	68. Yield

Source: Own Elaboration

¹¹⁵ GMOAnswers is an “initiative committed to responding to your questions about how food is grown. Its goal is to make information about GMOs in food and agriculture easier to access and understand” (GMOAnswers, 2017).

¹¹⁶ Cross pollination is “the transfer of pollen from one flower to the stigma of another” (Merriam-Webster, 2017g). Adventitious presence is the result of cross-pollination (EC, Feb 20, 2017).

¹¹⁷ Neonicotinoids is: “ the most widely used class of insecticides in the world”(Johnson, Nov 23 2016).

¹¹⁸ EuropaBio is the European Association for Bioindustries.

¹¹⁹ Thiamethoxam is: “a nicotinoid compound with broad-spectrum insecticidal properties” (Hamilton, p. 1787). Research has found that thiamethoxam can harm “honeybees, aquatic insects, birds, and other insects and animals” (Stecker, Jun 27 2017).

Step 2-B.3—Overarching Theoretical Dimensions Development

This step involves using my second-order themes in order to come up with overarching theoretical dimensions to find with higher order categories using selective coding. This was an iterative process that involves going back and forth between the data and the theory in order to discover the overarching theoretical dimensions that helped develop theory (Tracey & Phillips, 2016). This procedure was described by Tracey and Phillips (2016, p. 745) as: “This involved looking at the relationship between the first- and second-order themes, and seeking to refine them into a set of simpler and more parsimonious categories” (Tracey & Phillips, 2016, p. 745). Selective coding is described as: “Selective coding requires the selection of the focal core code, that is, the central phenomenon that has emerged from the axial coding process. All other core codes derived from that axial coding process must be related in some way to this focal core code, either directly or indirectly” (Douglas, 2003, p. 50).

I identified two overarching theoretical dimensions. The first is: Passive Strategic Responses, and the second is: Active Strategic Responses¹²⁰. See *Figure 16: MaxQDA Coding Display*, *Table 17: Stigma Responses Coding I*, *Figure 17: Stigma Responses Coding II* and *Table 18. Stigma Responses Coding III*. The next step involves tabulation of codes themes.

Figure 16: MaxQDA Coding Display



Source: Own Elaboration

¹²⁰ Inspired by the literature by (Oliver, 1991) who looked at strategic responses to institutional processes.

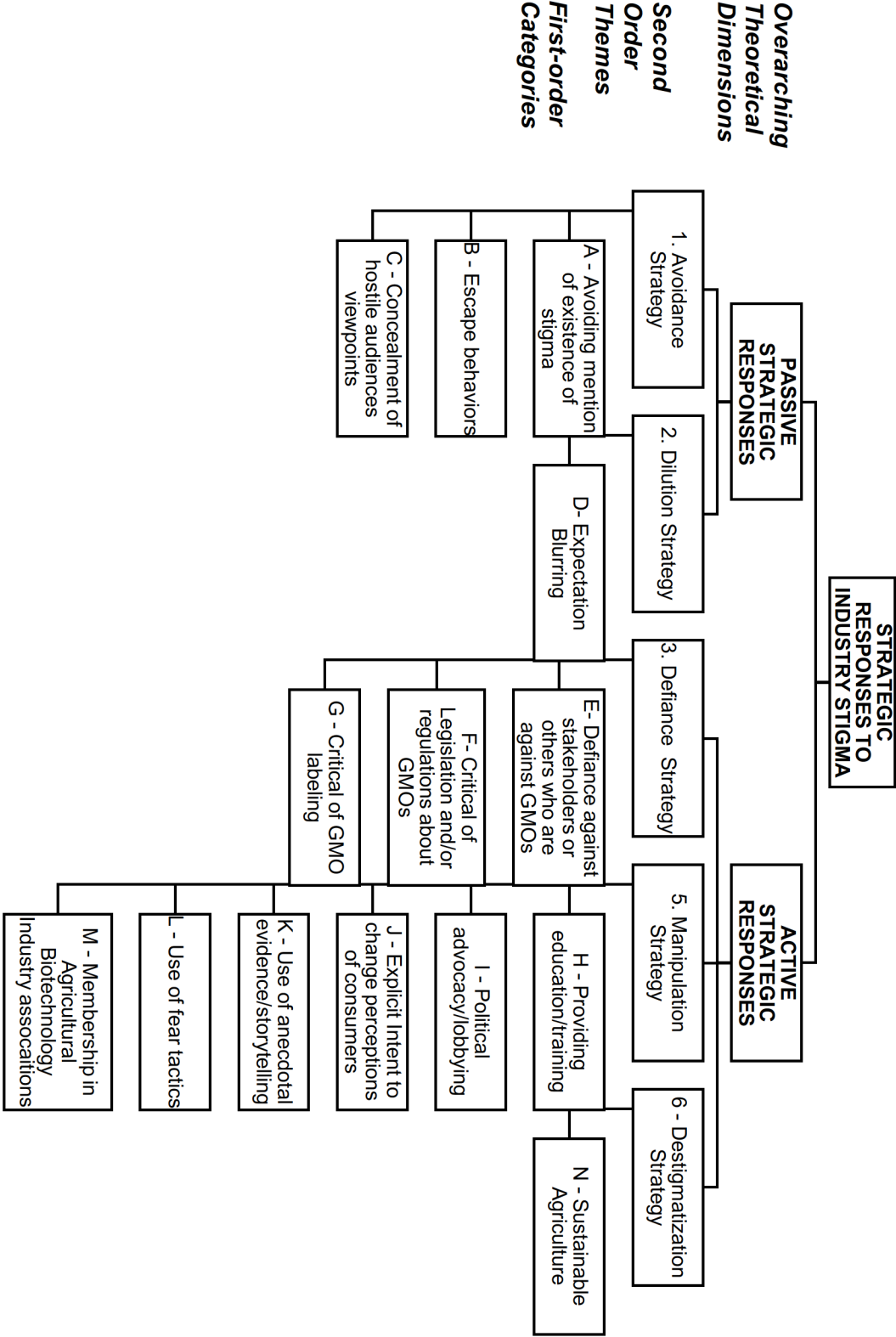
Table 17: Stigma Responses Coding I

Step of Data Analysis	Type of Coding	Development	
Step 2-B.1	Open Coding	First-order Categories Development	<ul style="list-style-type: none"> A. Avoiding mention of existence of stigma B. Escape behaviors C. Concealment of hostile audiences' viewpoints D. Expectation Blurring E. Defiance against stakeholders or other who are against GMOs F. Critical of legislation and/or regulations about GMOs G. Critical of GMO labeling H. Providing education/training I. Political advocacy/lobbying J. Intent to change perceptions of consumers K. Use of anecdotal evidence/storytelling L. Use of fear tactics M. Membership in agricultural biotechnology industry association N. Sustainable agriculture
Step 2-B.2	Axial Coding	Second Order Themes development	<ul style="list-style-type: none"> 1. Avoidance Strategy 2. Dilution Strategy 3. Defiance Strategy 4. Manipulation Strategy 5. Destigmatization Strategy
Step 2-B.3	Selective Coding	Overarching Theoretical Dimensions Development ¹²¹	<ul style="list-style-type: none"> I. Passive Strategic Responses II. Active Strategic Responses

Source: Own Elaboration

¹²¹ The conceptualization of the Overarching Theoretical Dimensions, "Passive Strategic Responses" and "Active Strategic Responses" were drawn from the literature on Strategic Responses to Institutional Pressures from (Oliver, 1991).

Figure 17 : Stigma Responses Coding II¹²²



Source: Own Elaboration

¹²² The conceptualization of the Overarching Theoretical Dimensions, "Passive Strategic Responses" and "Active Strategic Responses" were drawn from the literature on Strategic Responses to Institutional Processes from Oliver (1991).

Table 18: Stigma Responses Coding III

Overarching Theoretical Dimensions	second-order Themes	first-order Categories	Explanation	
Passive Strategic Responses	1 — Avoidance of Stigma	A ¹²³	Avoiding mention of existence of stigma	Avoidance of the mention of consumer acceptance issue is a passive coping strategy to stigma.
		B	Escape behaviors	Explicitly mentioning activities that represent a firms' intent to escape stigma is a passive coping strategy.
		C ¹²⁴	Concealment of hostile audiences ¹²⁵ viewpoint	Avoidance of the mention of explicit concerns by stakeholders regarding agricultural biotechnology.
	2 — Stigma Dilution	D	Expectation Blurring	Reframing company-specific activities in order to dilute a company's association to the stigmatized industry and blur stakeholder expectations.
	3 — Defiance to Stigma	E	Defiance against those who are against GMOs	Defiance against the concerns of hostile audiences shows a defiance to stigma strategy.
		F	Critical of legislation and/or regulations about GMOs	Being critical of the regulatory approval process for GMOs is a sign of defiance to stigma.
Active Strategic Responses		G	Critical of GMO labeling	Being critical of GMO labeling initiatives or legislation.
	4 — Manipulation of Stigma	H	Providing education/training	Providing education or training to farmers and/or the public is a form of manipulation.
		I	Political advocacy/lobbying	Engaging in political advocacy or lobbying is a way that firms manipulate stigma by attempting to modify the way in which the company and the industry is viewed.

¹²³ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation.

¹²⁴ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences' viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences' viewpoints/concerns is shown as an illustrative quotation.

¹²⁵ Hostile audience represents those who stigmatize the industry. This term was used by Tracey and Phillips (2016), Vergne (2012) and Hudson and Okhuysen (2009).

		J	Explicit intent to change perceptions of consumers	Explicit mention of intention to change consumer perception is a manipulation strategy.
		K	Use of anecdotal evidence/storytelling	The use of anecdotal evidence and/or storytelling about farmers who have experienced benefits from the company's products is a manipulation of stigma strategy.
		L	Use of fear tactics	Use of fear tactics involves attempting to manipulate consumer opinion using statements aimed at inducing fear in the public about not using GMOs.
		M	Membership in Agribiotechnology Industry associations	Membership in industry associations that influence public policy and/or public opinion on GMOs.
	5—De-stigmatization	N	Sustainable Agriculture	Reframing industry-specific activities in terms of sustainable agriculture.

Source: Own Elaboration

Step 2-B.4—Tabulation of coded segments

The tabulation of coded segments involved three steps, each described in turn.

2-B.4.1 — Step 1

I created a table where I marked the presence (1 point) or absence (0 points) of each of first-order category (A through N), for each year from 2000 to 2015¹²⁶. Following this, I summed up the total scores for each first-order category. I then determined the sum for each second-order theme using the scores for each first-order category within each second-order theme. More specifically:

- Avoidance Score was determined by tallying the sum of scores A through C. This gave a total over 48 (16 years x 3 first-order categories).
- Dilution Score was determined by Score D as only one first-order category exists within this second order theme.
- Defiance Score was determined by tallying the sum of scores E through G. This gave a total over 48 (16 years x 3 first-order categories).
- Manipulation was determined by tallying the sum of scores H through M. This gave a total over 96 (16 years x 6 first-order categories).
- Destigmatization was determined by Score N as only one first-order category exists within this second-order theme.

This score is then converted to a percentage score (over 100) for each strategic response to stigma. See *Table 19: Sample Strategy Frequency Scoring Table*.

2-B.4.2 — Step 2

The results obtained in 2-B.4.1 for each second order theme was converted to a score over 100. See *Table 19: Sample Strategy Frequency Scoring Table*. In addition to coding for specific themes and sub-themes, attention was paid for qualitative differences within each subtheme.

2-B.4.3 — Step 3

This step involves converting numerical scores into the following labels in order to facilitate cross case comparison:

¹²⁶ All documents available for each year for each firm was examined to determine the presence or absence of each first-order category.

- If a score 0–20% is obtained for the strategy in question, a score of “Very Low” is obtained for that strategy.
- If a score 21–40% is obtained for the strategy in question, a score of “Low” is obtained for that strategy.
- If a score 41–60% is obtained for the strategy in question, a score of “Moderate” is obtained for that strategy.
- If a score 61–80% is obtained for the strategy in question, a score of “High” is obtained for that strategy.
- If a score 81–100% is obtained for the strategy in question, a score of “Very High” is obtained from that strategy.

Table 19: Sample Strategy Frequency Scoring Table

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Coping Mechanisms				Active Coping Mechanisms									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000														
2001														
2002														
2003														
2004														
2005														
2006														
2007														
2008														
2009														
2010														
2011														
2012														
2013														
2014														
2015														
SUM	$\frac{Sum}{48} = \%^{127}$			$\frac{Sum}{16} = \%$	$\frac{Sum}{48} = \%$			$\frac{Sum}{96} = \%$						$\frac{Sum}{16} = \%$
Strategic Response Usage														

Source: Own Elaboration

¹²⁷ Percentages rounded to the nearest percentage.

3.3.3 Step 3: Cross Case Synthesis of Strategic Responses to Stigma

In this step, a cross-case synthesis technique was used. This was done by treating each individual case separately, and then assembling the results in order to aggregate the findings across the cases and compare them. According to Yin (2013, p. 165) when discussing cross case synthesis techniques, he describes: “One possibility starts with the creation of word tables that display the data from the individual cases according to one or more uniform categories.” This is precisely what I did in my cross-case synthesis. Yin (2013, p. 166) also states that: “[...] you might have created more complex word tables, going beyond single categories, by arraying a whole set of categories or features, effectively profiling each case—still on a case-by-case basis.”

After each individual case study was completed, the cross case analysis compared the results of each case study analysis with one another to search for patterns (Eisenhardt, 1989). The cross-case analysis was conducted with two main objectives in mind: to compare firms based on category membership (single or multiple) and on global headquarters location. My cross-case analysis procedure is based on the recommendations by Eisenhardt (1989, p. 540): “One tactic is to select categories or dimensions, and then to look for within-group similarities coupled with inter-group differences. Dimensions can be suggested by the research problem or by existing literature, or the researcher can simply choose the dimensions.”

Cross-case analysis was compared to determine the differences in strategic responses used between firms and between quadrants. In this study, a cross-case analysis was conducted on the findings of each first-order category, second-order theme, and overarching theoretical dimension. The presence or absence of first-order categories in each year for each company were tallied. Moreover, the search to identify common themes or patterns, and look at differences between companies within each code was conducted. Moreover, strategy summary table results were also compared among firms. In order to discover the themes between the different cases, I looked at frequency of appearance and pervasiveness of codes across different firms. My analysis involved an inductive approach whereby observations lead to pattern development which led to theory building. I primarily searched for repetitions of and frequency of strategic responses. Cross case analysis comparison tables are also created. See *Table 20: Table Example—Avoidance Strategies Cross Case Comparison*, *Table 21: Strategy Summary Table I*, and *Table 22: Strategy Summary Table II*. Tables similar to *Table 20: Table Example—Avoidance Strategies Cross Case Comparison* were created for each second-order theme in order to cross analyze each first-order category among each firm.

Table 20: Table Example—Avoidance Strategies Cross Case Comparison¹²⁸

	STRATEGIC RESPONSES TO STIGMA ANALYSIS AVOIDANCE OF STIGMA CROSS-CASE ANALYSIS																	
	BASF			Bayer			Dow			DuPont			Monsanto			Syngenta		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
2000																		
2001																		
2002																		
2003																		
2004																		
2005																		
2006																		
2007																		
2008																		
2009																		
2010																		
2011																		
2012																		
2013																		
2014																		
2015																		
SUM¹²⁹	$\frac{Sum}{48}$ = % ¹³⁰			$\frac{Sum}{48} = \%$			$\frac{Sum}{48} = \%$			$\frac{Sum}{48} = \%$			$\frac{Sum}{48} = \%$			$\frac{Sum}{48} = \%$		
Usage¹³¹																		

Source: Own Elaboration

¹²⁸ Similar tables were used for every second-order theme. This example illustrates the first-second order theme (Avoidance).

¹²⁹ The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. The 48 is obtained by multiplying 16 * 3.

¹³⁰ Percentages rounded to the nearest percentage point.

¹³¹ Strategic response usage varies from Very Low to Very High.

Table 21: Strategy Summary Table¹³²

	Passive Coping Strategies		Active Coping Strategies	
	Avoidance	Dilution	Defiance	Manipulation
Very Low (0 - 20%)				
Low (21–40%)				
Moderate (41 - 60%)				
High (61–80%)				
Very High (81 - 100%)				

Source: Own Elaboration

Table 22: Strategy Summary Table II¹³³

	Very Low					Low					Moderate					High					Very High				
	A	DI	DE	M	DS	A	DI	DE	M	DS	A	DI	DE	M	DS	A	DI	DE	M	DS	A	DI	DE	M	DS
Dow																									
Du Pont																									
BASF																									
Bayer																									
Monsanto																									
Syngenta																									

Source: Own Elaboration

¹³² The cells are shaded in grey and indicated with an (x) to correspond to the results of each case.

¹³³ A stands for Avoidance; DI stands for Dilution; DE stands for Defiance; M stands for Manipulation; DS stands for Destigmatization. The cells are shaded in grey and indicated with an (x) to correspond to the results of each case.

3.3.4 Step 4: Theoretical Model Development

The last step of my analysis involves linking themes found into theoretical models and building on existing literature. My procedure followed the advice given by Eisenhardt (1989), in which she stated that: “An essential feature of theory building is comparison of the emergent concepts, theory, or hypotheses with the extant literature. This involves asking what is this similar to, what does it contradict, and why. A key to this process is to consider a broad range of literature” (Eisenhardt, 1989, p. 544). Generalizations derived from cross-case analysis was conducted by looking at replication and contrasting logic within the cases (Yin, 2013). This was a highly iterative process involving constantly going back and forth between the literature and the data in order to properly tie the emergent theory with the existing literature (Eisenhardt, 1989; Glaser & Strauss, 2009; Yin, 2013). This was an inductive process with many phases of iteration (Glaser & Strauss, 2009). The importance of this process was described by Eisenhardt (1989, p. 545):

Overall, tying the emergent theory to existing literature enhances the internal validity, generalizability, and theoretical level of theory—building from case study research. While linking results to the literature is important in most research, it is particularly crucial in theory—building research because the findings often rest on a very limited number of cases. In this situation, any further corroboration of internal validity or generalizability is an important improvement.

The following section describes the strengths and limitations of my research.

3.4 Strengths and Limitations

Author and Data Bias

The entirety of my data revolves around the reporting of firm executives in the form of annual reports, CSR reports and SEC disclosure filings. My use of only company reports may bring about some data bias as these reports are created by management, and certain reports such as the CSR reports may have impression management motives (Neu, Warsame et al., 1998). However, one can assume that the annual report and SEC filings are truthful as these are audited and required by law. Moreover, I include three different types of reports, which adds to the richness of my data and the likelihood that the data will provide rich and accurate insight. Moreover, management research has used annual reports in the past (Bowman, 1984; Jenkins & Yakovleva, 2006; Lajili & Zéghal, 2005; Meek, Roberts et al., 1995) as well as letters to shareholders (Fiol, 1995) in order to examine strategy. Therefore, I am using a method that has been highly applied in previous studies. The following section describes the limitations of using a case study method.

Case Study Limitations

The use of the case-study method does not allow for generalizability of findings to all stigmatized firms. That being said, however, it does help shed light on the phenomenon in a very rich way. Moreover, it opens up avenues for future research. For instance, future research can employ a quantitative method in order to help validate findings. See Chapter 6 for further discussion on avenues for future research. The following section describes the strengths and weaknesses of data used.

Strengths and Weaknesses of Data Used

The source of evidence used for my thesis is from archival records and documentation. There are some great benefits, yet also some drawbacks to this. See *Table 23: Strengths and Weaknesses*. First, documentation is “stable” throughout time and can be re-examined and re-read as often as needed (Yin, 2013, p. 106). Secondly, it is a rather “unobtrusive” way of conducting research. It requires no face-to-face communication with any subjects or participants (Yin, 2013, p. 106). Thirdly, it allows me to look for specific information that is relevant to me, and to get exact details that I need (Yin, 2013, p. 106). Lastly, the information I collected is very broad and covers over 16 years therefore, it allows me to look at differences over time (Yin, 2013, p. 106).

There are also, however, some weaknesses to using documentation and archival records. The first one involves retrievability (Yin, 2013, p. 106). At times documents were not easy to find and required a lengthy search time (Yin, 2013, p. 106). A second drawback involves the potential for biased selectivity (Yin, 2013, p. 106). There were instances where some reports were missing which may have contributed to biased results. However, there due to a very small minority of missing reports, I don’t expect this affect to be large. See *Table 24: Strengths and Weaknesses*.

Table 23: Strengths and Weaknesses

Source of Evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> • Stable—can be reviewed repeatedly • Unobtrusive—not reacted as a result of the case study • Specific—can contract the exact names, references, and details of an event • Broad—can cover a long span of time, many events, and many settings 	<ul style="list-style-type: none"> • Retrievability—can be difficult to find • Biased selectivity—if collection is incomplete • Reporting bias—reflects (unknown) bias of any given document's author • Access—may be deliberately withheld
Archival Records	<ul style="list-style-type: none"> • <i>(same as those for documentation)</i> • precise and usually quantitative 	<ul style="list-style-type: none"> • <i>(Same as those for documentation)</i> • Accessibility due to privacy reasons

Source: Modified from Yin (2013, p. 106)

3.5 Reliability and Validity

Construct validity, or the extent to which the operational measures for the concepts are appropriate was ensured by using multiple sources of evidence in order to establish a chain of evidence (Yin, 2013). External validity, also known as the extent of generalizability, was ensured by use of the selected research design that followed replication logic (Yin, 2013). Internal validity was ensured by using appropriate data analysis techniques by following appropriate coding guidelines (Yin, 2013). Lastly, reliability was ensured by being transparent about the case study protocol and ensuring that a case study database was kept (Yin, 2013). See *Table 24: Case Study Tactics for Design Tests*.

Table 24: Case Study Tactics for Design Tests

TESTS	Case Study Tactic	Phase of Research in which Tactic Occurs
Construct Validity	<ul style="list-style-type: none"> • Use multiple sources of evidence • Establish chain of evidence 	Data collection Data collection
Internal Validity	<ul style="list-style-type: none"> • Do pattern matching • Do explanation building • Address rival explanations • Use logic models 	Data analysis Data analysis Data analysis Data analysis
External Validity	<ul style="list-style-type: none"> • Use theory in single-case studies • Use replication logic in multiple-case studies 	Research design Research design
Reliability	<ul style="list-style-type: none"> • Use case study protocol • Develop case study database 	Data collection Data collection

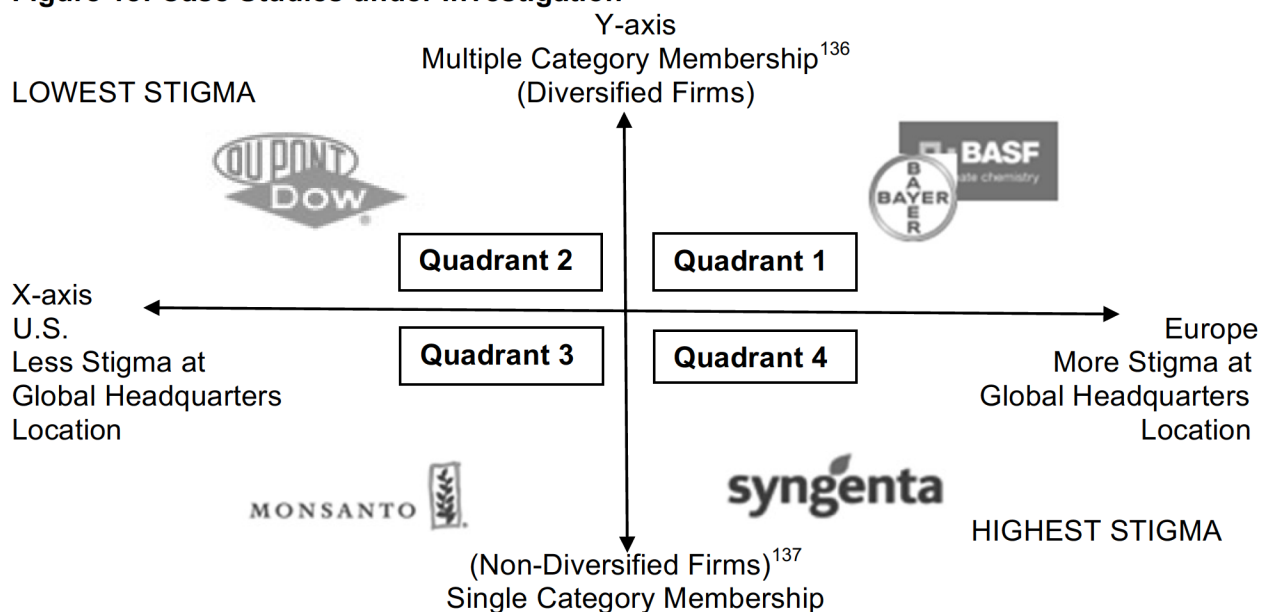
Source: Modified from Yin (2013, p. 45)

CHAPITRE 4/CHAPTER 4

PRÉSENTATION DES CAS/ PRESENTATION OF CASES

This chapter will present each of the Big Six firms. The chapter is divided into 4 sections, based on each quadrant¹³⁴. An in-depth case study description of each firm follows with illustrative quotations and descriptions of the different strategies employed. See *Figure 18: Case Studies under Investigation* for a depiction of the quadrants. The X-axis represents stigma at global headquarters location. The Y-axis represents category membership.

Figure 18: Case Studies under Investigation¹³⁵



Source: Own Elaboration

Quadrant 1: BASF and Bayer are grouped because they are both diversified firms, and they both have global headquarters in Europe (Higher Stigma).

Quadrant 2: Dow and DuPont are grouped because they are both diversified firms, and they both have global headquarters in the U.S. (Lower Stigma).

Quadrant 3: Monsanto is a non-diversified firm with global headquarters in the U.S.

Quadrant 4: Syngenta is a non-diversified firm with global headquarters in Europe.

¹³⁴ Each quadrant is divided based on global headquarters location, and single or multiple category membership. Quadrant 1: BASF, Bayer. Quadrant 2: Dow, DuPont. Quadrant 3: Monsanto. Quadrant 4: Syngenta.

¹³⁵ Company logos obtained from firms' corporate websites.

¹³⁶ Diversified firm, general chemical company and multiple category membership firms will be used interchangeably for the purpose of my thesis.

¹³⁷ Non-diversified firm and single category membership firm will be used interchangeably for the purpose of my thesis.

4.1 Quadrant 1

4.1.1 CASE STUDY #1: BASF

4.1.1.1 Description of the Firm

The first firm under investigation is the German multinational chemical company, Badische Anilin—& Sodafabrik, or more commonly known as BASF SE.¹³⁸ BASF was founded in 1865, in Mannheim, Germany by Friedrich Engelhorn, as a company that specialized in dyes (BASF, 2017e). Many years later, the firm is now a general chemicals company with a diverse range of products. The company currently operates in the following segments: Chemicals, Performance Products,¹³⁹ Functional Materials & Solutions,¹⁴⁰ Agricultural Solutions, and Oil & Gas (BASF, 2015a). See *Figure 19: BASF Segments*.

Figure 19: BASF Segments

Chemicals	Performance Products	Functional Materials & Solutions	Agricultural Solutions	Oil & Gas
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Source: Information from BASF (2017h)

As of May 2017, BASF had a market capitalization of \$91 billion, assets of \$89.9 billion, profits of \$4.5 billion, and sales of \$63.7 billion (Forbes, 2017b). The company is ranked 93rd on Forbes Global 2000¹⁴¹ (Forbes, 2017b), and 123rd on Forbes Global 500 (Forbes, 2017b). In 2015, BASF was named the largest chemical company in the world, for the 9th straight year (Tullo, Jul 27 2015). The company is currently listed on the Frankfurt Stock Exchange (ticker symbol: BAS), the London Stock Exchange (ticker symbol: BFA), and the Swiss Stock Exchange (ticker symbol: BAS) (BASF, 2017k). The company delisted from the NYSE in 2007¹⁴² (BASF, Jul 30 2007). Since

¹³⁸ The SE is a European public limited company (EC, 2016).

¹³⁹ "Performance Products include a portfolio of products that contribute to stability, color and better application properties to many everyday products" (BASF, 2016c).

¹⁴⁰ Product portfolio for functional materials & solutions "comprises of catalysts, battery materials, engineering plastics, polyurethane systems, automotive coatings, surface treatment solutions and concrete admixtures as well as construction systems like tile adhesives and decorative paints" (BASF, 2016b).

¹⁴¹ The Forbes Global 2000 is a comprehensive annual ranking of the world's largest public companies (Forbes, 2017a).

¹⁴² Thereby terminating its Form 20-F reporting requirements with the SEC.

the firm delisted from the NYSE, the company runs a level 1 ADR¹⁴³ program traded on the OTC¹⁴⁴ market (BASF, 2017j). BASF is also a component of the DAX 30,¹⁴⁵ Dow Jones Chemicals (DJUSCH) and MSCI World Index¹⁴⁶ indices (BASF, 2017k). The company currently operates in 5 segments, 4 regions, 13 operating divisions (5 research and 8 functional), 84 strategic business units, 7 corporate units, with 6 Verbund¹⁴⁷ sites and 338 additional production sites globally (BASF, 2015a, 2017h).

BASF's global headquarters are located in Ludwigshafen, southwestern Germany (BASF, 2017d). The company has Verbund sites located in Ludwigshafen (Germany), Antwerp (Belgium), Geismar (Louisiana, USA), Freeport (Texas, USA), Kuantan (Malaysia), and Nanjing (China) (BASF, 2017l). BASF has sites in over 80 countries including Europe, Americas, Asia Pacific and as well as the Middle East and Africa (BASF, 2017l). The Asian-Pacific market is the firms' fastest growing market (BASF, 2017l).

Strategic Purpose, Principles and Values

BASF describes its strategy as the “We create chemistry” strategy, in which the company focuses on “innovation based on chemistry” (BASF, 2017g). Specifically, BASF makes the following claim: “We combine economic success, social responsibility and environmental protection. Through science and innovation, we support our customers in nearly every industry in meeting the current and future needs of society” (BASF, 2017g). The company describes its corporate purpose as creating chemistry for a sustainable future (BASF, 2015b, p. 14), with the goal of “contribut[ing] to a world that provides a viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources” (BASF, 2017d). BASF's corporate purpose focuses on three separate elements: The first is, Resources, Environment and Climate; the second is, Food and Nutrition;

¹⁴³ “A basic type of ADR where foreign companies either don't qualify or don't wish to have their ADR listed on an exchange. Level 1 ADRs are found on the OTC market and are an easy and inexpensive way to gauge interest for its securities in North America. Level 1 ADRs also have the loosest requirements from the Securities and Exchange Commission (SEC)” (Investopedia).

¹⁴⁴ Over-the-counter markets are “networks of trading relationships centered around one or more dealers” (Dodd, Jul 29, 2017).

¹⁴⁵ The DAX is “a blue-chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange” (Investopedia).

¹⁴⁶ MSCI World Index “is a global equity benchmark that represents large and mid-cap equity performance across 23 developed markets countries” (MSCI, 2017).

¹⁴⁷ Verbund concept is when “production facilities, energy flows and logistics are networked together intelligently in order to utilize resources as efficiently as possible” (Zienkiewicz, Sep 15 2016).

and the third, is Quality of Life (BASF, 2017i, p. 2). See *Table 25: BASF Corporate Purpose* for a more detailed description.

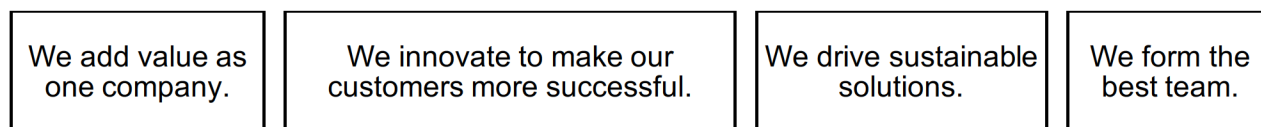
Table 25: BASF Corporate Purpose

Resources, environment, and climate	Dramatically rising energy demand is one of the world's most pressing challenges. In addition, access to clean water and efficient use of resources are becoming increasingly important.
Food and Nutrition	A growing world population obviously needs correspondingly more food. And it will be necessary to enhance nutrition quality.
Quality of Life	Population growth and globalization present further challenges. Aspirations differ greatly from region to region and among different social groups, but there is a common ambition: people want to improve their individual quality of life.

Source: Information from BASF (2017i, p. 2)

As of 2015, the company has four strategic principles (BASF, 2017d): the first is, “we add value as one company”; the second is, “we innovate to make our customers more successful”; the third is, “we drive sustainable solutions”; and the fourth is, “we form the best team” (BASF, 2017d). See *Figure 20: BASF Strategic Principles*.

Figure 20: BASF Strategic Principles



Source: Information from BASF (2017d)

BASF describes its corporate values as being creative, open, responsible and entrepreneurial (BASF, 2015b, p. 14). BASF values creativity, employees with bold ideas (BASF, 2015b, p. 14). They value those who inspire others and build value-adding partnerships, as well as those who aim to constantly improve products, services and solutions (BASF, 2015b, p. 14). BASF also values openness, which includes a diversity of people, opinions, and experience (BASF, 2015b, p. 14). Moreover, they aim to foster dialogue based on honesty, respect and trust, and encourage those who explore their talents and capabilities (BASF, 2015b, p. 14). The company also values responsibility and having an entrepreneurial spirit (BASF, 2015b, p. 14). See *Figure 21: Corporate Values* for a more detailed description.

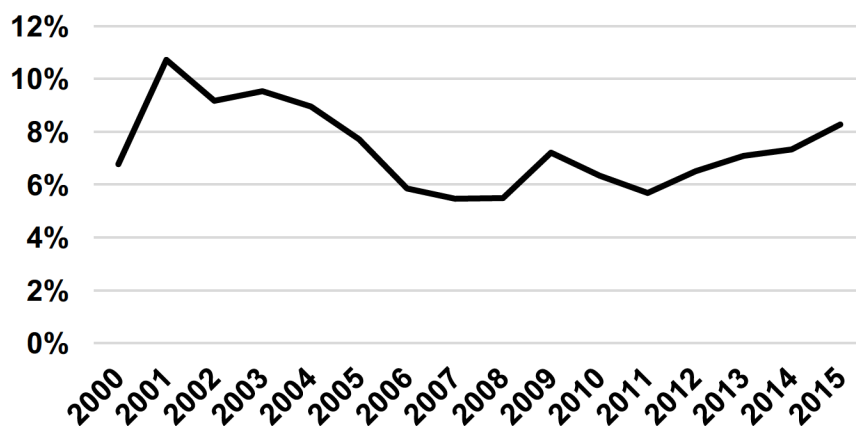
Figure 21: BASF Corporate Values

Creative	Open	Responsible	Entrepreneurial
<ul style="list-style-type: none"> •We have the courage to pursue bold ideas. •We inspire each other and build value-adding partnerships. •We constantly improve our products, services and solutions. 	<ul style="list-style-type: none"> •We value diversity - in people, opinions and experience. •We foster dialog based on honesty, respect and mutual trust. •We explore our talents and capabilities. 	<ul style="list-style-type: none"> •We act responsibly as an integral part of society. •We strictly adhere to our compliance standards. •We never compromise on safety. 	<ul style="list-style-type: none"> •We all contribute to our company's success, as individuals and as a team. •We turn market needs into customer solutions. •We take ownership and embrace personal accountability.

Source: Information from BASF (2015b, p. 14)

4.1.1.2 Exposure to Stigma

BASF's agricultural solutions segment reported sales of €2,820 million in 2015, up from €5,446 million in 2014 (BASF, 2015a). BASF's agricultural segment headquarters are located in Limburgerhof, Germany with 1,500 employees (BASF, 2017a). BASF is a diversified company with membership in multiple categories. Therefore, the agricultural products division is merely a small percentage of the firms' overall sales. See *Figure 22: BASF Agricultural Sales Percentage* for a look at the firms' percentage of sales in agriculture over time.

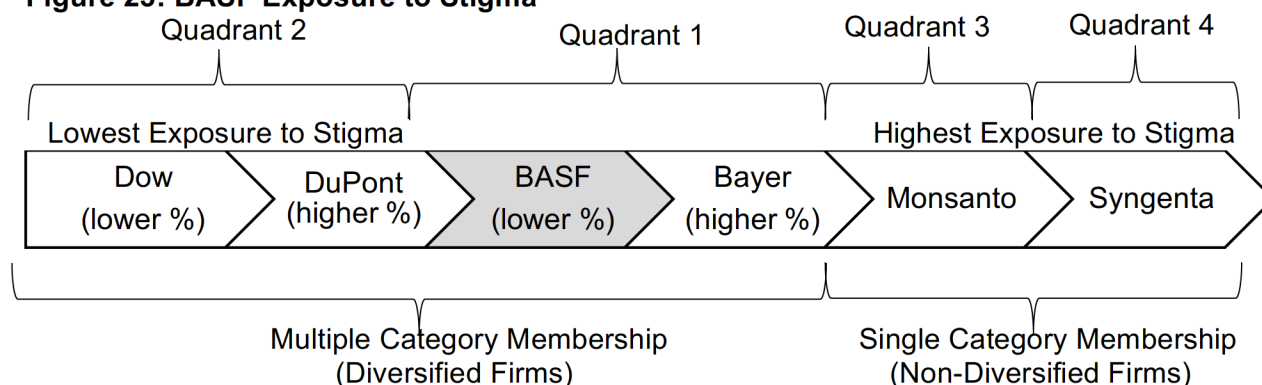
Figure 22: BASF Agricultural Sales Percentage

Source: Annual Reports¹⁴⁸

¹⁴⁸ Data compiled from Annual Reports and graphed. Figures rounded to the nearest percent.

Moreover, BASF has their global headquarters located in Europe, which is an area of higher stigma (when compared to U.S.). See *Figure 23: BASF Exposure to Stigma* to see a comparison of BASF's exposure to stigma relative to the other five firms of the Big Six. Compared to Bayer (also in quadrant 1), BASF has lower percentage of sales in agriculture¹⁴⁹, and therefore faces lower stigma than Bayer (even though both BASF and Bayer are diversified firms located in Europe). Consequently, BASF is ranked 4th highest exposure to stigma when compared to the other Big Six firms. See *Figure 23: BASF Exposure to Stigma*.

Figure 23: BASF Exposure to Stigma¹⁵⁰

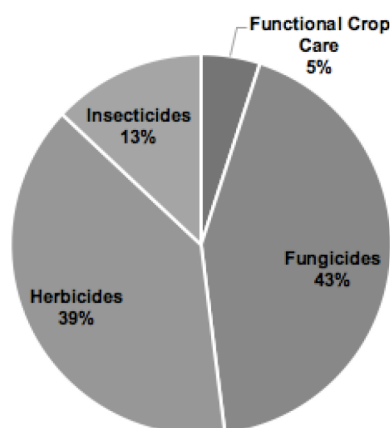


Source: Own Elaboration

BASF's agricultural segment is separated into two divisions: the first is the Crop Protection Division and the second is BASF Plant Science (BASF, 2017a). BASF's Crop Protection division focuses on fungicides, herbicides, insecticides, and other products (BASF, 2017a). BASF Plant science focuses on developing genetically enhanced crops (BASF, 2017a). In 2016, the company's sales in agriculture were broken down as follows: 43% in Fungicides, 39% in Herbicides, 13% in Insecticides and 5% for Functional Crop Care (BASF, 2016a). See *Figure 24: BASF Agricultural Sales 2016*.

¹⁴⁹ Percentage of sales in agriculture in 2015.

¹⁵⁰ BASF has 4th highest exposure to stigma when it comes to the *Big Six firms*. Syngenta has the highest exposure to stigma (1st highest), Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

Figure 24: BASF Agricultural Sales 2016

Source: Information from BASF (2016a, p. 80)

BASF legitimizes its agricultural products division operations by claiming: “Agriculture plays a fundamental role in fulfilling many of humanity’s basic needs: food, feed, energy. To support growers and those who take care of our environment, BASF develops innovative solutions for farming, pest control and landscape management—so that we can effectively contribute to improving for people’s lives and business’ demands” (BASF, 2017m).

The company’s main research centers for BASF Plant Science are in Research Triangle Park¹⁵¹, North Carolina (USA), St.-Jean-sur-Richelieu (Canada), Ghent (Belgium) and Berlin (Germany). BASF has testing stations in the U.S., Brazil, Spain, Germany, India and the Philippines (BASF, 2017a). The firms’ average expenses incurred in order to develop a new final product includes a 10-year investment and approximately €200 million (BASF, 2017a).

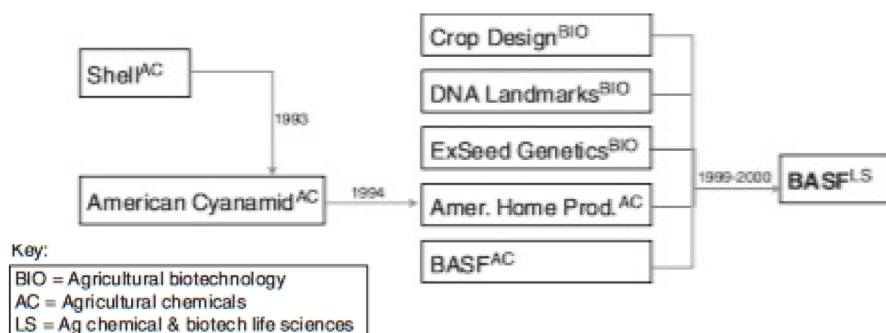
In 2014, the company celebrated the 100-year anniversary of its Agricultural Center site in Ludwigshafen, Germany (BASF, 2014d). BASF’s agricultural division was founded 103 years ago, in 1914, by I.G. Farben (BASF, 2014a). Important milestones for the company’s division includes the product Nitrophoska in 1926, the herbicide U46 between 1949 and 1964, and polyram in 1956, and polyram Kombi in 1957 (BASF, 2014a). The company’s agricultural segment expansion into the U.S. started in the mid-1960s, when BASF established a research station (BASF, 2014a). Later, the company expanded into Brazil and Japan (BASF, 2014c). The formation of today’s BASF’s agricultural activities stems from a line of mergers and acquisitions

¹⁵¹ Triangle park holds 200 companies and 50,000 employees in the fields of micro-electronics, telecommunications, biotechnology, chemicals, pharmaceuticals, and environmental sciences (RTP, 2017).

(Fuglie, Heisey et al., Dec 2011). See *Figure 25: Formation of BASF Agricultural Division*. The company's agricultural segment stems from Shell, American Cyanamid, Crop Design, DNA Landmarks, ExSeed Genetics, and American Home Products acquisitions (Fuglie, Heisey et al., Dec 2011).

In 1996, the company acquired part of Sandoz's business in herbicides (BASF, 2014d). This was followed by the company's purchase of American Cyanamid's agricultural business in 2000 for \$3.8 billion (Reisch, Mar 27 2000). This was BASF's largest acquisition in the company's history, and led to nearly doubling (Reisch, Mar 27 2000) of BASF's Crop Science division sales. In 2000, BASF acquired the rights to fipronil, one of BASF's most popular insecticide product sold in over 70 countries (BASF, 2017f). Acquisitions in this sector continued in 2008 when the company acquired the pest control business of the British Company Sorex (BASF, 2017c). Following this, BASF acquired Becker Underwood in 2012 (BASF, 2017c). With this acquisition, the company created a new business, and named it Functional Crop Care (BASF, 2014a). Over time, the company has undergone many acquisitions and agreements in the agricultural sector (Pelaez & Mizukawa, 2017). BASF had engaged in more agreements¹⁵² than acquisitions, with a focus on seeds and pesticides (Pelaez & Mizukawa, 2017). See *Table 26: BASF Acquisitions and Agreements in the Pesticide, Seeds, and Biopesticides Market*.

Figure 25: Formation of BASF Agricultural Division



Source: Modified from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009).

¹⁵² Agreements are described by Pelaez and Mizukawa (2017, p. 1) as “cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined.”

Table 26: BASF Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets

BASF							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides ¹⁵³	Total	Pesticides	Seeds	Biopesticides	Total
8	3	1	12	33	42	3	78

Source: Modified from Pelaez and Mizukawa (2017, p. 3)

Over the years, the company's agricultural segment has grown dramatically. The Agricultural Center in Ludwigshafen, Germany has approximately 1,700 employees (BASF, 2014a), covers 12,250m² of greenhouses with 40 hectares of land (BASF, 2014a). Other major sites for BASF's agricultural division are shown in *Figure 26: BASF Crop Protection—Major Sites Worldwide*.

Figure 26: BASF Crop Protection—Major sites worldwide

Source: BASF (2015b, p. 21)

Even though BASF's agricultural sales account for a small percentage of total sales, the company invests substantial resources to this sector. For instance, in 2014, BASF invested 27% of total R&D costs toward the agricultural sector (BASF, 2014b). In 2013, the company invested \$33 million in its expansion of its R&D facilities for agricultural research in Triangle Park, North Carolina (BASF, 2017b). As of 2016, the company employed 113,830¹⁵⁴ people worldwide, spent €1,863 million in R&D and employed 9,966 people in R&D (BASF, 2016a). In 2015, the company

¹⁵³ Biopesticides are pesticides which are "derived from such natural materials as animals, plants, bacteria, and certain minerals" (EPA, 2017).

¹⁵⁴ Employees calculated at year-end (BASF, 2016a).

invested €215 million in their Crop Protection division (BASF, Feb 26 2016). As of 2016, the BASF crop protection pipeline was valued at approximately €3 billion (BASF, Feb 26 2016).

Now that context has been provided regarding BASF's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

4.1.1.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by BASF will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for BASF. See *Table 27: BASF Strategic Responses to Stigma*, *Table 28: BASF Strategic Responses to Stigma Summary Table* and *Table 29: BASF Supportive Evidence—Illustrative Quotations*.

4.1.1.3.1 Passive Strategic Responses

4.1.1.3.1.1 Avoidance¹⁵⁵

The first strategic response to stigma discussed is avoidance. Signs of avoidance of stigma were moderate for BASF. Although BASF claimed to be very willing to listen to stakeholders and care about the concerns expressed, the company very often avoided explicitly mentioning the topic of disapproval or public concerns regarding GMO activity. The firm most often indirectly mentioned concerns of public approval without explicitly mentioning what kind of disapproval they had. Generic statements in the company's Form 20-F reports described stigma as a risk factor, however, mention of stigma was brief. Basic statements such as the following were made:

Many factors could cause the actual results, performance or achievements of BASF to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. These factors include, among others: regulatory approval, particularly in the areas of fine chemicals, agricultural products and plant biotechnology, and market acceptance of new products including genetically modified competitive products (BASF, 2000a, pp. i-ii; 2001b, pp. i-ii; 2002, pp. i-ii; 2003, pp. 1-2; 2004b, pp. 1-2; 2005b, pp. 2-3; 2006, p. 2).

¹⁵⁵ Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

An in-depth discussion of the firms' recognition of the reasons for stigma as well as their direct responses to the stigma were not mentioned. In other words, BASF did not acknowledge stakeholder concerns about GMOs directly. Moreover, general statements regarding efforts to improve public image were made, yet, they were usually unspecific and did not address the agricultural biotechnology sector¹⁵⁶. There were, however, exceptions to this. One notable exception was from 2000, when the company made the following statement:

BASF believes that biotechnology will be crucial to the crop protection industry in the 21st century. However, new crop varieties developed through biotechnology, particularly those with genetically modified traits such as herbicide resistance, have experienced significant criticism from the public in Western Europe. Fears about unknown health risks still dominate public perception in Europe, and producers of genetically modified crops are struggling to address these concerns (BASF, 2000a, p. 66; 2001b, p. 61).

In 2012, the company engaged in escape behavior. More specifically, BASF decided that due to lack of acceptance in the European market, to discontinue activities aimed solely for the European market and to move the agricultural headquarters from Europe to the United States. More precisely, the firm stated: "In view of the lack of acceptance of plant biotechnology in large parts of Europe, we moved the BASF Plant Science headquarters from Germany to the U.S. in 2012. Projects aimed exclusively at the European market were therefore discontinued" (BASF, 2012, p. 35). This quote shows an escape behavior when BASF disengaged from stigma. To summarize, the most frequently used avoidance tactic for BASF was first-order category C: *Concealment of hostile audiences' viewpoint (14/16)*, followed by A: *Avoiding mention of existence of stigma (5/16)*. The next strategic response discussed is dilution.

4.1.1.3.1.2 Dilution¹⁵⁷

The second strategic response is dilution. Throughout the years, BASF was very active in using dilution strategies. The company consistently aligned their corporate strategy in a way that dilutes their association to the stigmatized industry. In other words, BASF's corporate strategy involved careful attention to avoid giving off the impression of being part of the stigmatized industry. For instance, BASF's corporate strategy is about creating chemistry for a sustainable future (BASF, 2017d). This is a vague and unspecific statement with no clear link to agriculture or agricultural biotechnology. Upon first glance, it is not clear that BASF operates in the

¹⁵⁶ Unspecific statements encompass those statements claiming the importance of stakeholder acceptance, or related statements without specifically mentioning the stigmatized industry in question.

¹⁵⁷ Dilution is the second-order theme with only one first-order category: D: Expectation Blurring.

agricultural biotechnology segment. For instance, in 2012 the company described itself in the following way:

We combine economic success with social responsibility and environmental protection. We make our contribution to finding the answers to global challenges, such as climate protection, energy efficiency, nutrition and mobility. This is our contribution to a better future for us and for coming generations (BASF, 2007, p. 1).

Another example is from 2012 when the company stated: “Sustainability is firmly embedded in our strategy and organization. Sustainability management supports our strategic principle ‘We drive sustainable solutions,’ helping us to put our company’s purpose — ‘We create chemistry for a sustainable future’—into practice” (BASF, 2012, p. 27). Over time, BASF demonstrated efforts to loosen their ties to the industry by confusing stakeholders. This is done in a way to bombard the public giving them so much information about the firm, that they don’t retain the stigmatized industry in their head. For instance, the company stated:

BASF is the world’s leading chemical company: The Chemical Company. It’s portfolio ranges from chemicals, plastics, performance products and crop protection to oil and gas. We combine economic success, social responsibility and environmental protection. Through science and innovation we enable our customers in almost all industries to meet the current and future needs of society. Our products and system solutions contribute to conserving resources, ensuring healthy food and nutrition and helping to improve quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future (BASF, 2011, p. 5).

Furthermore, tackling global challenges is something the firm constantly reiterates. This is done to give a halo effect¹⁵⁸ impression whereby a consumer is led to believe that the firms’ intentions are pure. Another example is from 2008:

Despite the strong economic headwind, I firmly believe that chemistry is the motor for innovation when it comes to finding solutions for global challenges like climate protection, nutrition, water, energy, mobility, and an overall better quality of life for the growing world population. In short: BASF wants to shape the future with chemistry, especially in difficult times like the present. And to do so, we need outstanding innovations above all (BASF, 2008, p. 9).

¹⁵⁸ Term coined by Edward Thorndike, and is described as “If we see a person first in a good light, it is difficult subsequently to darken that light” (Hindle, 2009).

The company also uses buzzwords, such as “global megatrends¹⁵⁹” in discussing their activities. These strategies have the aim of blurring stakeholder expectations of the firm by making vague statements about their activities:

Megatrends such as rapid population growth and increasing energy needs are creating global challenges, which we meet with innovative solutions and projects for the future. The four global technology platforms: Polymer Research, Specialty Chemicals Research, Chemicals Research & Engineering, as well as Plant Biotechnology Research, act with the research and development units of the operating divisions as our knowledge and competence center (BASF, 2008, p. 34).

Year after year, similar statements are made. For instance, in 2009, the company stated:

How can we feed a growing world population and provide enough clean water for everyone? How do we meet increasing demands for energy? We address these and other questions related to global megatrends in five growth clusters: plant biotechnology, white biotechnology, raw materials change, energy management, and nanotechnology. In these clusters, the focus is on markets and technologies of the future (BASF, 2009, p. 32).

Similarly, in 2010, the company continued to tackle global megatrends:

The objectives of our future-oriented projects are determined by global megatrends such as population growth, increasing urbanization as well as rising energy and resource demand. BASF's corporate research is a strategic tool we use to develop growth clusters and secure BASF's long-term competence with regard to technology and methods. In 2015, we aim to generate sales of up to €8 billion with product innovations—new or improved products or applications that have been on the market for less than five years (BASF, 2010, p. 115).

In sum, BASF engaged in stigma dilution strategies with the purpose of blurring stakeholder expectations frequently. The company obtained a very high score for *D: Expectation Blurring* (16/16). The next strategic responses discussed are active strategic responses to stigma. The active strategic responses discussed include defiance, manipulation and destigmatization.

4.1.1.3.2 Active Strategic Responses

4.1.1.3.2.1 Defiance¹⁶⁰

The third strategic response is defiance. BASF used defiance very sparingly. It was clear the company did not want to seem defensive and argumentative when it came to public perception of agricultural biotechnology. By not being argumentative, they are better able to shield

¹⁵⁹ Global megatrends are “macroeconomic and geostrategic forces” that change the world (Pwc, Nov 2016).

¹⁶⁰ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

themselves from the industry and ensure attention is not drawn to their stigmatized activities. They instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. An example is from 2001, when the company stated:

In addition to economic challenges, we are faced with adverse political conditions. I find the European Union's strong tendency toward over-regulation in its current policies particularly counterproductive. Above all, this applies to the new chemicals legislation and plans for emission trading. Both of these moves create worrying uncertainty with regard to capital expenditures in the chemical industry, threaten the industry's capacity for innovation and endanger jobs. We will therefore continue to engage in emphatic dialogue with all those involved to seek solutions that are both practicable and viable (BASF, 2001a, p. 5).

When BASF made statements about legislations regarding GMOs, they were often made in a very subtly defiant way. The company did not outright use language that sounded defensive on the surface. In other words, the firm did not outwardly attack consumers, farmers or legislators. The following is an example:

Plant biotechnology offers enormous opportunities in terms of economic growth and jobs. Positive political signals are needed at the EU level and in the individual member states to further its agricultural use in Europe. The European Commission has created a clear legal framework for the development and responsible use of this technology. In order to promote research and application at a practical level, appropriate innovation-friendly legislation is needed at the national level (BASF, 2005a, p. 15).

To summarize, the most frequently used defiance strategy by BASF was *F: Critical of legislation and/or regulations about GMOs* (2/16). The next strategic response discussed is manipulation.

4.1.1.3.2.2 Manipulation¹⁶¹

The fourth strategic response is manipulation. Different types of manipulation tactics were used by BASF over the years. First, the company made statements about being politically active, and involved with governments to create or change policy regarding global seed and agrochemical or chemical legislation. BASF using manipulation techniques to deal with stigma can be found very often from 2000–2015. An example is from 2000:

As a research-based company, BASF also believes in developing a political response to the rapid pace of innovation and knowledge. Our goals here include the acceptance of plant biotechnology, the concept of sustainability and the better orientation of the education system toward competition (BASF, 2000b, p. 59).

¹⁶¹ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.

Another example is from 2001:

We remain extremely anxious about the existing ban on the use of genetically modified plants in Europe. All three issues will be decided in Brussels, but German politicians are involved in several stages of the decision-making process. Our Brussels and Berlin offices are liaising closely with the relevant German and European associations to decide when, to what extent and to which target groups these issues will need to be addressed (BASF, 2001a, p. 60).

The above quote indicates intent to manipulate perception by engaging politically, but also by being involved in the educational system. Moreover, BASF has stated very clearly, they believe in being active in politics to help legislation move in their favor. This is something which was made very clear in the early 2000s. As time went on, their statements became less explicit, but held the same meaning. For instance, in 2005 the company said:

One of the tasks of the political process is to shape the basic conditions for how companies operate. Ultimately, this also determines their success. Our key message to politicians is that they ensure that these conditions promote competitiveness and innovation because BASF and its customers need to be competitive and innovative in order to remain successful. This is why we try to find viable solutions in an active and constructive dialogue with all relevant political levels (BASF, 2005a, p. 15).

Moreover, in 2009, the company linked social responsibility with political dialogue as to imply that engaging in agricultural biotechnology is a social responsibility. Specifically, the firm stated:

Plant biotechnology is an especially controversial topic in Europe. We take our social responsibility seriously: That is why, at an early stage, we enter into close dialogue with farmers, politicians and consumers to explain the benefits of the processes used and our products (BASF, 2009, p. 73).

A similar theme was present in 2004, when the company stated:

We can obtain high-quality starch for technical applications from genetically modified potatoes. Crops that thrive in arid regions are another contribution to sustainability. We can implement these ideas only if the technology is accepted by society. We are therefore working to create a climate of greater acceptance for future technologies, especially in Europe (BASF, 2004a, p. 26).

Moreover, in 2005, the company stated:

Biotechnological processes offer resource-saving and cost-effective alternatives to chemical synthesis. But we need a rational basis to use the potential of biotechnology. This is why we do what we can to increase the acceptance for this promising technology, especially in Europe (BASF, 2005a, p. 36).

The company also used fear tactics to convince skeptical consumers or investors about their products. An example is from 2001:

There are now six billion people on this planet; by 2020, the world population will have climbed to over eight billion. To provide all of these people with sufficient food and a balanced diet will be one of the major challenges of the 21st century. In addition to improved cultivation methods and superior crop varieties, modern crop protection products will play a key role in overcoming this challenge: They combat fungal diseases, keep pests and weeds at bay and thus help increase crop yields (BASF, 2001a, p. 38).

The company also stated: “Our goal is to optimize crops so that farmers can achieve greater and more secure yields. In this way, we make an important contribution to securing a better food supply for a growing world population” (BASF, 2014b, p. 83) Lastly, BASF engaged in manipulation by taking part in agricultural biotechnology industry associations. For instance, the company stated in 2004: “We are actively involved in the public debate and believe in the importance of information and transparency. As a member of EuropaBio, we are committed to their ethical principles” (BASF, 2004a, p. 45). The company also uses storytelling and anecdotal evidence from farmers to persuade public perception. Their annual reports and corporate social responsibility reports include stories of farmers who have benefited from their products. An example is from 2014:

In North America, innovation specialists visit our customers in the field, where they work together on tailor-made solutions for success. One of these farmers is Matt Miles from the U.S. state of Arkansas. Together, we developed a plan—from planting seeds to applying fertilizers and crop protection products, all the way to harvest. Matt produced a record yield in Arkansas in 2013: He harvested more than 7 tons of soybeans per hectare. Farmers usually achieve 3 to 4 tons on average (BASF, 2014b, p. 28).

The company also engaged in training for farmers. Providing training to farmers which is a manipulation strategy as the aim of the training is to increase the use of their products, and may not include information that is in the best interest of the farmers. An example is from 2015:

In the Crop Protection division, we provide special safety training to farmers. We expanded our stewardship program for banana farmers to Latin America, China and the Philippines, where on-site BASF experts show how crop protection products can be used and stored in an effective and safe manner for people and the environment (BASF, 2015a, p. 103).

The company has also made explicit statements about intent change consumer perception. An example is from 2005:

Biotechnological processes offer resource-saving and cost-effective alternatives to chemical syntheses. But we need a rational basis to use the potential of biotechnology.

This is why we do what we can to increase the acceptance for this promising technology, especially in Europe (BASF, 2005a, p. 10).

To summarize, the most frequently used manipulation strategy by BASF was *L: Use of fear tactics* (16/16) followed by *I: Political advocacy/lobbying* (13/16). The next strategic response discussed is destigmatization.

4.1.1.3.2.3 Destigmatization¹⁶²

The fifth and final strategic response is destigmatization. BASF consistently attempted at industry destigmatization strategies. In other words, efforts to reframe the industry were found frequently. An example is from 2011 when the firm emphasized sustainable agriculture: “We also make an important contribution to sustainable agriculture because the cultivation of these plants significantly reduces the amount of land, water and energy required to produce each metric ton of harvested crops” (BASF, 2011, p. 70). Moreover, the firm stated implicitly that GMOs are sustainable solutions:

The rapidly growing world population presents society with special challenges. The demand for food, clean water and energy is growing and society’s needs are increasing, but resources are finite. Sustainable solutions are therefore required—and chemistry can make an important contribution (BASF, 2011, p. 28).

To summarize, BASF engaged in destigmatization behaviors every year, thereby obtaining a very high score for *N: Sustainable Agriculture* (16/16). The following section provides a summary of the strategic responses used by BASF in response to stigma.

4.1.1.4 Summary Description and Table

To recap, BASF has engaged in avoidance strategies, dilution strategies as well as manipulation and industry destigmatization strategies. The company engaged in very little defiance. See *Table 27: BASF Strategic Responses to Stigma*, *Table 28: BASF Strategic Responses to Stigma Summary Table* and *Table 29: BASF Strategic Supportive Evidence—Illustrative Quotations*. *Table 29* shows supportive evidence in the form of illustrative quotations that depicts examples of coding for each first-order category.

¹⁶² Destigmatization is the second-order theme with six first-order categories: N: Sustainable Agriculture.

The most frequently used avoidance strategy for BASF, was the concealment of hostile audiences¹⁶³ viewpoints. Although BASF often mentioned the existence of public disapproval, they rarely went into detail about the source of the issue or why people disapprove. In terms of dilution, the company often tried to disassociate itself from the industry by making their corporate strategy about issues not directly related to agricultural biotechnology. In terms of manipulation strategies, the company often discussed political advocacy and the use of fear tactics. Finally, attempts at industry reframing, or destigmatization were found very frequently.

¹⁶³ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuysen (2009), Tracey and Phillips (2016) and Vergne (2012).

Table 27: BASF Strategic Responses to Stigma¹⁶⁴

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses				Active Strategic Responses									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	–	–	–	X	–	–	–	–	X	X	–	X	–	X
2001	–	–	–	X	X	X	–	X	X	–	–	X	X	X
2002	–	–	X	X	–	–	–	X	–	–	–	X	–	X
2003	–	–	X	X	–	–	–	–	–	–	–	X	–	X
2004	–	–	X	X	–	–	–	–	X	X	X	X	X	X
2005	–	–	X	X	–	X	–	–	X	X	–	X	–	X
2006	–	–	X	X	–	–	–	–	X	–	X	X	–	X
2007	X	–	X	X	–	–	–	–	X	–	–	X	–	X
2008	–	–	X	X	–	–	–	–	X	–	–	X	–	X
2009	–	–	X	X	–	–	–	–	X	–	–	X	–	X
2010	–	–	X	X	–	–	–	X	X	–	–	X	–	X
2011	X	–	X	X	–	–	–	X	X	–	–	X	–	X
2012	–	X	X	X	–	–	–	X	X	–	–	X	X	X
2013	X	–	X	X	–	–	–	–	X	–	–	X	X	X
2014	X	–	X	X	–	–	–	X	–	–	X	X	X	X
2015	X	–	X	X	–	–	–	X	X	–	–	X	X	X
SUM ¹⁶⁵	5	1	14	16	1	2	0	7	13	3	3	16	6	16
	20/48 = 42%			16/16 = 100%	3/48 = 6%			48/96 = 50%						16/16 = 100%
Usage	Moderate			Very High	Very Low			Moderate						Very High

Source: Own elaboration

Table 28: BASF Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)			X		
Low (21–40%)					
Moderate (41 - 60%)	X			X	
High (61–80%)					
Very High (81 - 100%)		X			X

Source: Own Elaboration¹⁶⁶¹⁶⁴ (X) marks the presence of first-order category, while (–) marks the absence of the first-order category.¹⁶⁵ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.¹⁶⁶ Percentages obtained from Table 27: BASF Strategic Responses to Stigma.

Table 29: BASF Supportive Evidence—Illustrative Quotations

First-Order Categories		Supportive Evidence
AVOIDANCE		
A¹⁶⁷ = <i>Avoiding mention of existence of stigma</i>	1. “Many factors could cause the actual results, performance or achievements of BASF to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. These factors include, among others: regulatory approval, particularly in the areas of fine chemicals, agricultural products and plant biotechnology, and market acceptance of new products including genetically modified competitive products” (BASF, 2000a, pp. i-ii; 2001b, pp. i-ii; 2002, pp. i-ii; 2003, pp. 1-2; 2004b, pp. 1-2; 2005b, pp. 2-3; 2006, p. 2).	
B = <i>Escape Behaviors</i>	2. “Plant biotechnology is an important element of feeding a growing world population. Yet there is a lack of acceptance in large parts of Europe for the development and cultivation of genetically modified plants. We have therefore moved our plant biotechnology activities from Europe to the U.S.” (BASF, 2012, p. 8).	
C¹⁶⁸ = <i>Concealment of hostile audiences¹⁶⁹ viewpoint</i>	3. “BASF believes that biotechnology will be crucial to the crop protection industry in the 21 st century. However, new crop varieties developed through biotechnology, particularly those with genetically modified traits such as herbicide defiance, have experienced significant criticism from the public in Western Europe. Fears about unknown health risks still dominate public perception in Europe, and producers of genetically modified crops are struggling to address these concerns” (BASF, 2000a, p. 66; 2001b, p. 61).	
STIGMA DILUTION		
D = <i>Expectation Blurring</i>	4. “Through research and innovation, we support our customers in nearly every industry in meeting the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring good nutrition and improving quality of life. Innovations based on chemistry will play a key role in three areas in particular: resources, environment and climate; food and nutrition; quality of life. Our leading position as an integrated global chemical company opens up opportunities for us in all three of these areas” (BASF, 2013, p. 21).	
DEFIANCE		

¹⁶⁷ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation.

¹⁶⁸ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences' viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences' viewpoints/concerns is shown as an illustrative quotation.

¹⁶⁹ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuyesen (2009), Tracey and Phillips (2016) and Vergne (2012).

E = <i>Defiance against those who are against GMOs</i>	5. "In addition to economic challenges, we are faced with adverse political conditions. I find the European Union's strong tendency toward over-regulation in its current policies particularly counterproductive. Above all, this applies to the new chemicals legislation and plans for emission trading. Both of these moves create worrying uncertainty with regard to capital expenditures in the chemical industry, threaten the industry's capacity for innovation and endanger jobs" (BASF, 2001a, p. 5).
F = <i>Critical of legislation and/or regulations about GMOs</i>	6. "In addition to economic challenges, we are faced with adverse political conditions. I find the European Union's strong tendency toward over-regulation in its current policies particularly counterproductive" (BASF, 2001a, p. 5).
G = <i>Critical of GMO labeling</i>	NA ¹⁷⁰
MANIPULATION	
H = <i>Providing education/training</i>	7. "As a project partner in the 'Better Rice Initiative Asia,' we support the distribution of information in Indonesia and Thailand on the proper use of crop protection products. We are also involved in the development of courses to train farmers and agricultural consultants, as well as in the creation of educational materials and conducting seminars. For the staple rice, especially, farmers receive consultation on the selection of seeds, the right application of crop protection products and the analysis of growth. We support soybean farmers in a similar cooperation in India" (BASF, 2014b, p. 28).
I = <i>Political advocacy/lobbying</i>	8. "As a research-based company, BASF also believes in developing a political response to the rapid pace of innovation and knowledge. Our goals here include the acceptance of plant biotechnology, the concept of sustainability and the better orientation of the education system toward competition" (BASF, 2000b, p. 59).
J = <i>Explicit intent to change perceptions of consumers</i>	9. "Crops that thrive in arid regions are another contribution to sustainability. We can implement these ideas only if the technology is accepted by society. We are therefore working to create a climate of greater acceptance for future technologies, especially in Europe" (BASF, 2004b, p. 29).
K = <i>Use of anecdotal evidence/ storytelling</i>	10. "In North America, innovation specialists visit our customers in the field, where they work together on tailor-made solutions for success. One of these farmers is Matt Miles from the U.S. state of Arkansas" (BASF, 2014b, p. 27).

¹⁷⁰ No findings for BASF.

L = <i>Use of Fear Tactics</i>	11. "In 2050, more than nine billion people will live on Earth. One person in eight is already going hungry today. Yet nutritious food is essential to a healthy life. The faster the world's population grows, the more important it becomes to consider how we will feed everyone: How will everyone be able to eat healthfully? How can we combat malnutrition? What will the agriculture of the future look like" (BASF, 2014b, p. 25).
M = <i>Membership in Agrobiotechnology Industry Associations</i>	12. "As a member of CropLife International we have given a commitment to encourage integrated crop protection as part of projects as our contribution toward sustainable agriculture" (BASF, 2001c, p. 63).
DESTIGMATIZATION	
N = <i>Sustainable Agriculture</i>	13. "With a pioneering platform for gene discovery, BASF Plant Science has specialized in the development of plant characteristics such as higher yield, drought tolerance or disease defiance. Our goal is to optimize crops so that farmers can achieve greater and secure yields. In this way, we make an important contribution to the secure supply of food for the growing world population. We also contribute to sustainable agriculture because the cultivation of these plants significantly reduces the amount of land, water and energy required to produce each metric ton of harvested crops" (BASF, 2012, p. 81).

Source: Own Elaboration

4.1.2 CASE STUDY #2: BAYER

4.1.2.1 Description of the Firm

The second firm under investigation is Bayer AG¹⁷¹. Bayer is a German life sciences company founded in 1863 by Ffirich Bayer and Johann Friedrich Westkott in Leverkusen, Germany (Bayer, 2017c). Bayer is well known for its product aspirin or acetylsalicylic acid (Landau, Dec 22 2010) and for its production of Heroin in 1898 (Moghe, Oct 14 2016). Today, Bayer is an international conglomerate life science company, with core competencies in healthcare and agriculture (Bayer, 2015). The Bayer Group is made up of 307 consolidated companies in 77 industries (Bayer, 2015).

The company's headquarters are in Leverkusen, Germany. In 2015, Bayer employed 116,800 people worldwide (Bayer, 2015), and the company conducted a spin-off of its materials segment, Covestro,¹⁷² in order to focus their attention on the life sciences (Alessi, Sep 1 2015). See *Figure 27: Bayer Corporate Structure*. As of 2015, Bayer was the 10th-largest chemical company in the world (Tullo, Jul 27 2015). As of May 2017, Bayer's market capitalization was \$94.4 billion; with assets of \$90.1 billion, profits of \$5 billion, and sales of \$51.9 billion (Fortune, 2017a). The company was ranked 89th on Forbes Global 200 (Forbes, 2017c), and 124th on Fortune Global 500 (Fortune, 2017a).

Figure 27: Bayer Corporate Structure



Source: Bayer (2016, p. 42).

As of 2016, Bayer was listed on all German stock exchanges, as well as in Barcelona and Madrid (Bayer, 2017n). The company is listed on the following equity indices¹⁷³: CDAX, DAX, Dow Jones German Titans 30, FTSE Euro 100, FTSE Eurotop 100, FTSE Eurofirst 100, Euro STOXX, Euro STOXX 50, STOXX Europe 50, S&P Europe 350, S&P Global 100 (Bayer, 2017k). Bayer

¹⁷¹ "AG is an abbreviation of Aktiengesellschaft, which is a German term for a public limited company; this is a company whose shares are offered to the general public and traded on a public stock exchange, and whose shareholders' liability is limited to their investment" (Investopedia, 2017b).

¹⁷² Covestro is a supplier of high-tech polymer materials (Covestro, 2017).

¹⁷³ Equity indices are also known as stock indices.

delisted from the NYSE in 2007 (Bayer, Sep 5 2007). Following the delisting, the Bayer stock has been trading under an OTC Level I ADR¹⁷⁴ Program in the U.S. (Bayer, 2017a).

Strategic Purpose, Principles and Values

Bayer defines itself as a company that faces and addresses societal needs and issues by helping to solve the world's problems (Bayer, 2017f). More specifically, Bayer describes its strategy as: “our strategy is designed to help solve some of the most pressing challenges facing mankind, and by doing this exceptionally well we aim to strengthen the company’s earning power” (Bayer, 2017l). The company describes its activities as tackling challenges facing society. More specifically, Bayer (2017f) states: “The challenges facing society have not changed. They have only grown. The aging and expanding world population requires new and better medicines, as well as a much larger and more reliable food supply” (Bayer, 2017g) and “Our researchers never give up, although the challenges confronting them are changing all the time. When it comes to the major issues of our times, with science we have the power to change the world for the better” (Bayer, 2017g).

Bayer describes four strategic priorities (Bayer, 2017h). See *Figure 28: Bayer Strategic Priorities* for more details. These strategic priorities include the following: (1) Positioning business to megatrends; (2) Steering a leading portfolio; (3) Driving value; and (4) Focusing on innovation (Bayer, 2017h).

Figure 28: Bayer Strategic Priorities

1. Positioning business to mega trends: health and nutrition	2. Steering a leading portfolio: Leadership in our relevant markets	3. Driving value: Profitable growth.	4. Focusing on our strength: innovation.
<ul style="list-style-type: none"> •We provide solutions for two of the most pressing challenges of our times. 	<ul style="list-style-type: none"> •We invest in a portfolio of strong, value-generating businesses. 	<ul style="list-style-type: none"> •We increase the value of our businesses in the long-term. 	<ul style="list-style-type: none"> •We address unmet social challenges through innovation.

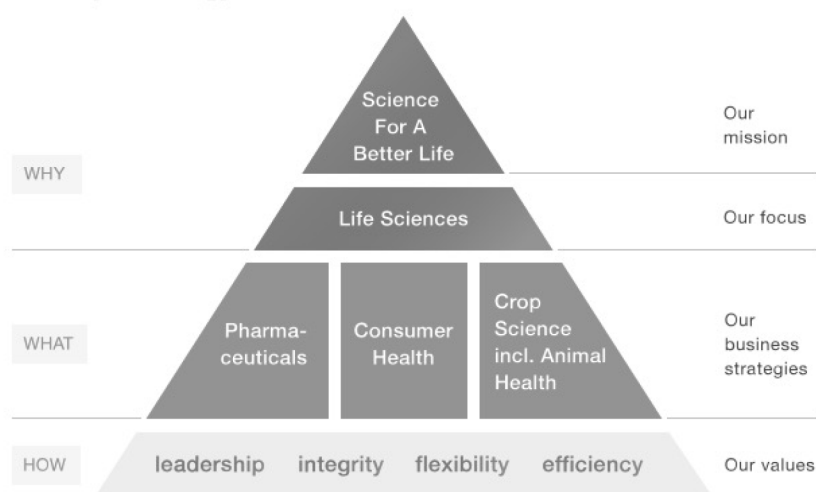
Source: information from Bayer (2017h)

The Bayer Strategy is depicted in *Figure 28: The Bayer Strategy Pyramid*. This strategy is depicted in the form of a pyramid where the top of the pyramid represents the company's mission, being “Science for a Better Life” (Bayer, 2017h). The rest of the pyramid describes the

¹⁷⁴ Similar to BASF.

company's focus, business strategies and values. As depicted in *Figure 29: The Bayer Strategy Pyramid*. Bayer's business strategies include: pharmaceuticals, consumer health and crop science (including animal health) (Bayer, 2017h). Bayer's values are described by the LIFE acronym, meaning leadership, integrity, flexibility and efficiency (Bayer, 2017h).

Figure 29: Bayer Strategy Pyramid



Source: Bayer (2017h)

Bayer is committed to sustainable business practices. See *Figure 30: Bayer Strategy*. Bayer has made a commitment to tackling global societal challenges, as well as their commitment to holding dialogue with stakeholders and engaging in responsible social commitments (Bayer, 2017o).

Figure 30: Bayer Strategy

1. Our Business	2. Our Responsible Business Practices	3. Global Societal Challenges	4. Dialogue and Commitment
<ul style="list-style-type: none"> •CropScience •Pharmaceuticals •Consumer Health 	<ul style="list-style-type: none"> •Supplier Management •Health, Safety and Environmental Protection •Compliance •Human Resources Policy •Product Stewardship 	<ul style="list-style-type: none"> •Access to Health Care •Demographic Change •Resource Scarcity •Climate Change •Food Security •Growing World Population 	<ul style="list-style-type: none"> •Social Commitment •Stakeholder Dialogue

Source: Information from Bayer (2017h)

Bayer operates around the globe with locations in the following countries: Germany, France, Finland, Norway, Netherlands, Belgium, Switzerland, Italy, Japan, Thailand, Indonesia, China, New Zealand, India, U.S., Mexico, Brazil, and Argentina (Bayer, 2015)

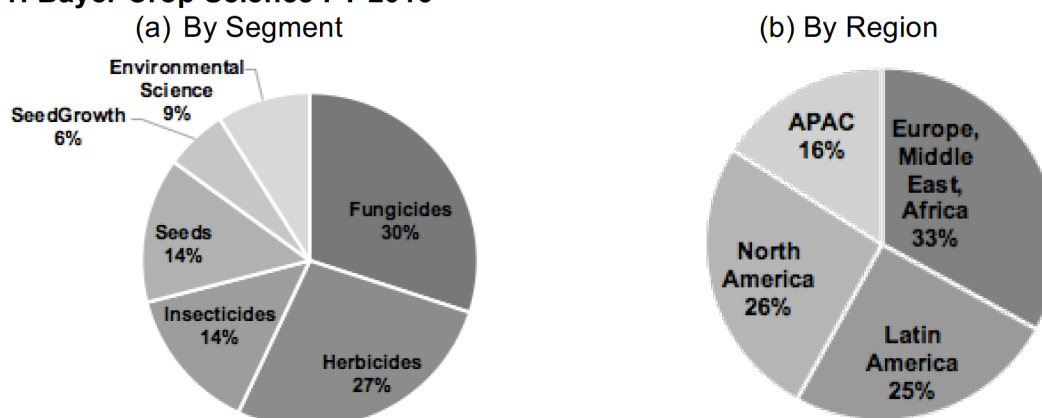
4.1.2.2 Exposure to Stigma

Agricultural Segment

Bayer entered into agricultural research in 1924 with the establishment of the Bayer Crop Protection Research Department (Bayer, 2017j). In 1951, Bayer launched Systox™ known as the “world’s first systemic insecticide” (Bayer, 2017j). The company’s Crop Protection division was established in 2002 (Bayer, 2017j). One of the firms’ largest acquisitions was the purchase of Aventis CropScience for €7.25 billion in 2002. Upon the procurement of Aventis, Bayer merged it with their own agrochemicals Crop Protection division in order to form Bayer CropScience (Smyth, Phillips et al., 2014 p. 560). Bayer CropScience became first legally independent Bayer subgroup in 2002 (Bayer, Jul 18 2016).

Bayer CropScience division reported sales of €10,367 million in 2015. Today, Bayer CropScience is divided into six operational business units and four regional units (Insecticides, Fungicides, Herbicides, and Seed Growth), in addition to Seeds and Environmental Science (Bayer, 2017d). Bayer CropScience has the following product portfolio: seeds, seed treatments, traits, herbicides, fungicides, insecticides and harvest aids/PGRs¹⁷⁵ (Bayer, 2017m). See *Figure 31: Bayer CropScience FY2016* for breakdown by segments and region.

Figure 31: Bayer Crop Science FY 2016



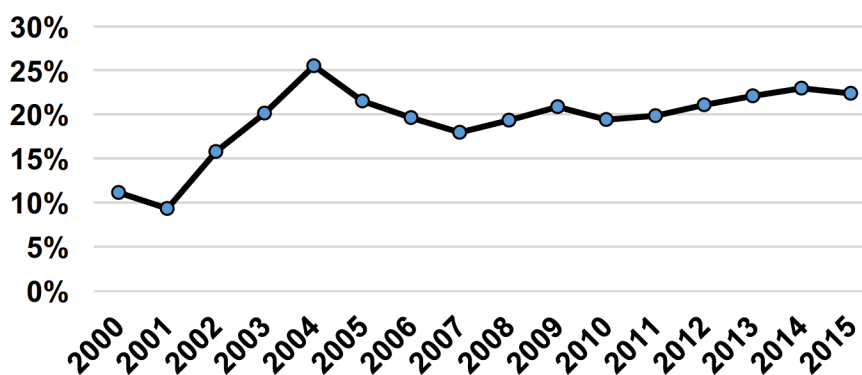
Source: Bayer (2017b, p. 1)

¹⁷⁵ Growth regulators are defined as “any of various synthetic or naturally occurring plant substances (such as an auxin or gibberellin) that regulate growth” (Merriam-Webster, 2017o).

As *Figure 31: Bayer Crop Science FY 2016* illustrates, the company's sales are mostly in fungicides and herbicides (Bayer, 2017b). Moreover, sales are the greatest in Europe, the Middle East, Africa and Latin American markets (Bayer, 2017b). The company's key crops include: corn, cotton, fruits and vegetables, oilseeds, rice, soybeans, sugar beets, sugar cane, and wheat (Bayer, 2017i).

Bayer CropScience today has presence in over 120 countries, with more than 19,000 employees (Bayer, 2017e). The company has its global headquarters located in Monheim, Germany, and its North American headquarters in Research Triangle Park, North Carolina (Bayer, 2017j). This company is highly diversified with sales in the agricultural products division being a minority percentage of overall sales. See *Figure 32: Bayer Agricultural Sales Percentage*.

Figure 32: Bayer Agricultural Sales Percentage

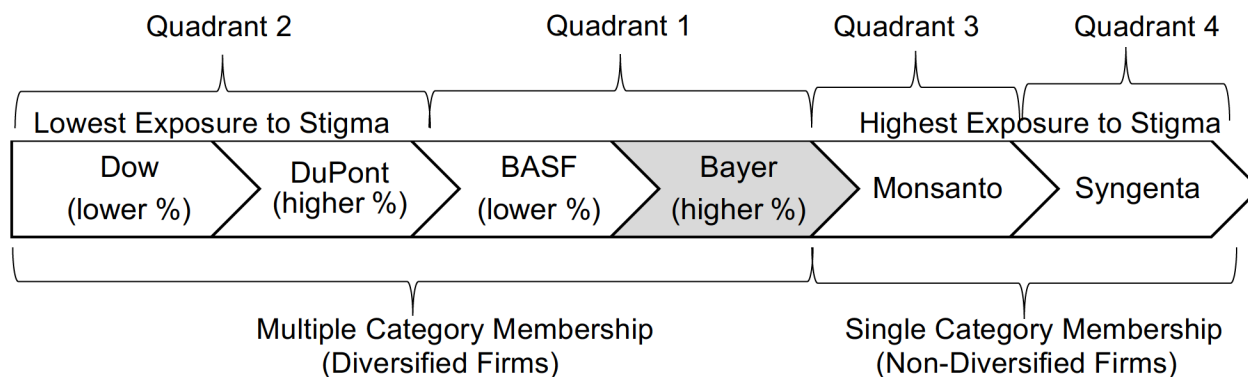


Source: Annual Reports¹⁷⁶

Bayer has global headquarters located in Europe, an area of higher stigma, but is a diversified firm operating in both stigmatized and non-stigmatized industries. See *Figure 33: Bayer Exposure to Stigma* to see a comparison of Bayer's exposure to stigma relative to the other five firms of the Big Six. Compared to BASF (also in quadrant 1), the firm has higher percentage of sales in agriculture,¹⁷⁷ and therefore has higher exposure to stigma than BASF.

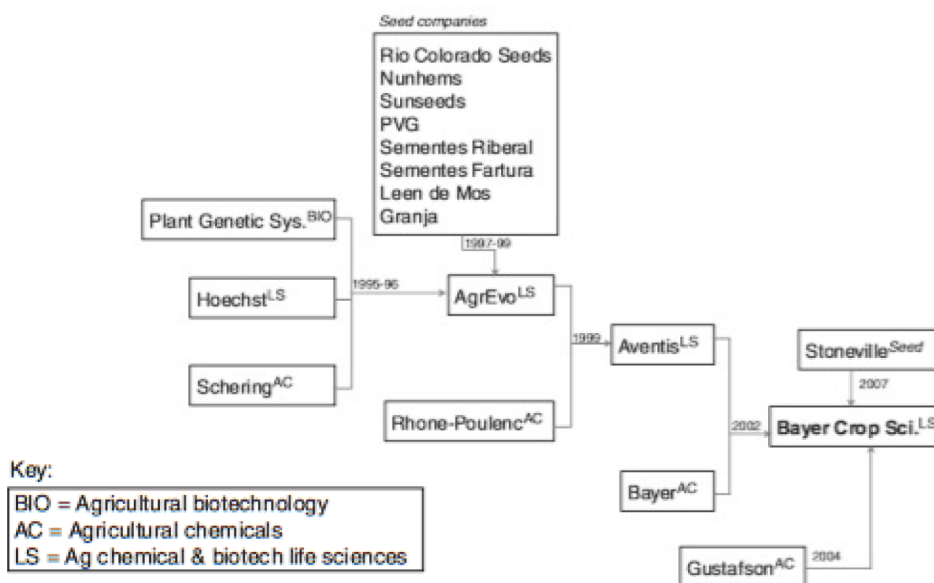
¹⁷⁶ Data compiled from Annual Reports and graphed. Figures rounded to the nearest percent.

¹⁷⁷ Percentage of sales in agriculture in 2015.

Figure 33: Bayer Exposure to Stigma¹⁷⁸

Source: Own Elaboration

The formation of today's Bayer CropScience was due to a number of mergers and acquisitions (Fuglie, Heisey et al., Dec 2011). The roots of Bayer CropScience stem from Aventis, Rhone-Poulenc, Plant Genetics Sys., Hoechst, Schering, among others. See *Figure 34: Formation of Bayer CropScience* (Fuglie, Heisey et al., Dec 2011).

Figure 34: Formation of Bayer CropScience

Source: Modified from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009)

¹⁷⁸ Bayer has 3rd highest exposure to stigma when it comes to the *Big Six firms*. Syngenta has the highest exposure to stigma (1st highest), Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

Over the years, Bayer has undergone many acquisitions and agreements¹⁷⁹ in the agricultural sector (Pelaiez & Mizukawa, 2017). See *Table 30: Bayer Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets*. As this table illustrates, the company has engaged mostly in agreements in the pesticide and acquisitions in the seed markets (Pelaiez & Mizukawa, 2017).

Table 30: Bayer Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets

Bayer							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides	Total	Pesticides	Seeds	Biopesticides	Total
12	21	4	37	43	34	6	83

Source: Modified from Pelaiez and Mizukawa (2017, p. 3)

In 2014, 27.5% of the company's R&D expenses were for the CropScience division (Bayer Annual Report, 2015). In 2015, that number was 25.4% (Bayer, 2015). As of 2015, Bayer Crop Science's largest R&D sites are located in Europe and the U.S. (Bayer, 2015). See *Table 31: Bayer CropScience R&D Sites* (Bayer, 2015).

Table 31: Bayer CropScience R&D Sites¹⁸⁰

Site	Country	Focus
Monheim	Germany	R&D of crop protection products, focus on insecticides
Frankfurt	Germany	R&D of crop protection, focus on herbicides
Lyon	France	R&D of crop protection products
Sophia Antipolis	France	R&D of crop protection products
Raleigh/Research Triangle Park	U.S.	R&D of crop protection products, research center for seeds
Sacramento	U.S.	R&D of crop protection products
Ghent	Belgium	Research center for seeds
Nunhem	Netherlands	Research center for vegetable seeds
Lubbock	U.S.	Research center for seeds, focus on cotton
Morrisville	U.S.	Research center for seeds

Source: Bayer (2015, p. 74)

Now that context has been provided regarding Bayer's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

¹⁷⁹ Agreements are described by Pelaiez and Mizukawa (2017, p. 1) as "cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined."

¹⁸⁰ Includes major sites only.

4.1.2.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by Bayer will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for Bayer. See *Table 32: Bayer Strategic Responses to Stigma*, *Table 33: Bayer Strategic Responses to Stigma Summary Table* and *Table 34: Bayer Supportive Evidence Illustrative quotations*.

4.1.2.3.1 Passive Strategic Responses

4.1.2.3.1.1 Avoidance¹⁸¹

The first strategic response to stigma discussed is avoidance. Signs of avoidance of stigma were frequent for Bayer. Avoidance is about distancing oneself from the issue in question. Bayer avoided explicitly mentioning the fact that they were trying to address stigma and change public perception by casting doubt on public concerns. The following is an example of indirect mention of stigma, and therefore avoidance of stigma:

We are convinced that Bayer can only be commercially successful over the long term if we balance economic growth with ecological and social responsibility. Bayer regards itself as a member of society and believes it needs society's long-term acceptance to be able to act with an entrepreneurial spirit. We allow ourselves to be guided by long-term values in the implementation of our sustainability strategy (Bayer, 2010, p. 8).

The above statement is a common way Bayer addressed the issue. In other words, it did not draw attention to the fact that the company faces controversy for their GMO activities. Moreover, even when the company does explicitly mention the issue of GMO acceptance, Bayer does not explicitly list the concerns nor do they directly address them. Instead, they either avoid mentioning the issue, or they make statements such as:

We respect the concerns about genetically modified organisms (GMOs) expressed by society, but we share the consensus view expressed by the scientific community that GMOs do not represent a safety risk when the legal requirements are observed (Bayer, 2007, p. 88).

Another example is from 2015 when Bayer says:

¹⁸¹ Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

We act responsibly, have good arguments and need not shun controversy. Ultimately, no one can deny the huge benefit delivered by the innovations from our laboratories. In the life science industry, it's all too easy to overlook the significant downside of not deploying these innovations. We need societal acceptance and appreciation to continue to contribute those benefits (Bayer, 2015, p. 6).

Even though Bayer occasionally engages in avoidance, the company still on occasion makes a passing statement regarding stakeholder concerns. An example is from 2012:

Modern technologies principally require transparent action and strict risk management. Safety is Bayer's top priority in the use of biotechnology. Beyond the observance of all relevant legal provisions, we have formulated our own Position on the Responsible use of Gene Technology [68] and specific regulations for the subgroups and service companies. We address the concerns of consumers who are worried about health risks for people and negative effects on indigenous plants and animals as a result of genetically modified organisms (Bayer, 2012, p. 35).

Overall, the company engaged in stigma avoidance frequently, and even when stigma was mentioned, it was often brief and vague. To summarize, the most commonly used avoidance strategy by Bayer was C: *Concealment of hostile audiences' viewpoint* (11/16) followed by A: *Avoiding mention of existence of stigma* (9/16). The next strategic response discussed is dilution.

4.1.2.3.1.2 Dilution¹⁸²

The second strategic response discussed is dilution. Bayer's corporate mission of "Science for a better life" is a very broad statement that blurs stakeholder expectations with the end result of diluting the stigma they face. For instance, in 2013, the company stated:

Bayer currently spends over €3 billion on R & D each year and we will continue to do our part in developing new products that truly address these urgent societal needs. In other words, we remain dedicated to our mission "Bayer: Science for a Better Life" (Bayer, 2013, p. 3).

The company claimed to address global challenges with their products. For instance, in 2015, Bayer stated: "With our innovations, we address major societal challenges on a global scale. Around 9.7 billion people will be living on our planet by 2050" (Bayer, 2015, pp. 5-6). In other words, Bayer's strategy involves tackling large societal problems on a global scale. Namely, those of healthcare and agriculture.

For our company, the strategic management of sustainable development is a basic prerequisite for our competitiveness and our future viability. All areas of Bayer's business are affected by global megatrends such as the energy shortage, demographic change,

¹⁸² Dilution is the second-order theme with only one first-order category: D: Expectation Blurring

urbanization and, of course, climate change. Engaging these issues is therefore an integral part of our risk management strategy, but this will at the same time lead to the development of future markets (Bayer, 2007, p. 24).

Moreover, buzzwords, such as “global megatrends” were used to justify their activities:

In this connection, we are focusing clearly on the global megatrends—including in particular the development of the world population and the associated issues of safeguarding food supplies, healthcare provision, energy efficiency and effective climate protection. We are aligning our portfolio and our sustainability management to these challenges. And we offer innovative strategies, products and solutions across the entire spectrum of these issues of the future (Bayer, 2008b, p. 5).

In other words, the company’s strategy enables them to dilute stigma by blurring stakeholder expectations. Similar statements were made over time. For instance, in 2009 the company stated:

Our strategy is focused on global megatrends and related issues such as healthcare, reliable food supplies, energy efficiency and climate protection. We align our product portfolio and our commitment to sustainability to these future-related topics by offering innovative strategies, products and solutions in the fields of healthcare, nutrition and high-quality material (Bayer, 2009, p. 4).

A similar statement was made in 2007:

The strategic management of sustainable development is a basic prerequisite for our competitiveness and our future viability. All areas of Bayer’s business are affected by global megatrends such as the energy shortage, demographic change, urbanization and, of course, climate change. Engaging these issues is therefore an integral part of our risk management strategy, but this will at the same time lead to the development of future markets. Meanwhile, the financial markets are increasingly rewarding sustainable and responsible corporate policy (Bayer, 2007, p. 27).

In sum, Bayer engaged in very high stigma dilution strategies to blur stakeholder expectations, obtaining *D: Expectation Blurring (16/16)*. The next strategic responses discussed are the active strategic responses to stigma. These include defiance, manipulation and destigmatization.

4.1.2.3.2 Active Strategic Responses

4.1.2.3.2.1 Defiance¹⁸³

The third strategic response discussed is defiance. Bayer did not want to seem defensive and argumentative when it came to public perception. They instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. An example of a defiance

¹⁸³ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

strategy is from 2014 “I am concerned by the growing number of critical stakeholders whose claims and demands are based on emotions and beliefs rather than on scientific facts” (Bayer, 2014, p. 6).

The company tried to shield itself from stigma, therefore, drawing attention to critical stakeholders was not something that Bayer wanted to do. Yet, Bayer still engaged in defiance tactics. A defiance tactic that the company used was to actively defend themselves in lawsuits. One example is from 2012 and 2013 when Bayer defended itself in its neonicotinoid crop protection products. More specifically, in 2013 and 2014 the company stated:

Bayer considers the decision by the European Commission to be scientifically unjustified and legally flawed. The active ingredients in question were extensively examined with regard to their impact on bee health already during the approval procedure. Bayer has appealed the decision by the European Commission in order to ensure legal certainty for approval procedures (Bayer, 2013, p. 126; 2014, p. 121).

Besides taking legal action, the company has also made defensive statements. Bayer has openly stated that it disagrees with public policy in the European Union:

The European Union has agreed on a new ordinance to harmonize existing legislation on crop protection. While we welcome the efforts made by the European Union the results of the consultations lead us to be increasingly concerned about the introduction of risk-based exclusion criteria. This entails a departure from the socially accepted principle—also predominant in technological evaluations—that, alongside a theoretical evaluation of risk, an evaluation based on exposure in practice is an essential factor that must be taken into account in any risk assessment (Bayer, 2008b, p. 100).

Another defiance tactic used involved the company bringing restrictions to the European Court of Justice:

Bayer has brought the restriction on neonicotinoid use in the Europe before the Court of Justice of the European Union in order to clarify the legal basis of the Commission's decision. This decision is based on an assessment by the EFSA that in turn is based on neither a validated nor an officially recognized risk assessment system. With a view to future investment decisions, the company is primarily asking that the court clarify the regulatory framework (Bayer, 2015, p. 122).

Bayer has also made statements about regulations for GMOs being inappropriate, for instance in 2003, the company stated:

The introduction of new regulations, data requirements or test guidelines is a normal part of enhancing safety assessments for crop protection products. However, unpredictable new requirements and inappropriate deadlines have led to numerous delays of registrations of crop protection products in the past, especially in the authorization

processes in the EU and in the NAFTA countries. Therefore, Bayer CropScience must anticipate new regulatory trends and must closely follow the process of developing and requiring new data. Bayer CropScience also actively participates in these processes by commenting on draft guidelines and regulations proposed by the authorities (Bayer, 2003, p. 66).

Bayer has also openly criticised the EU restriction on neonicotinoid use:

Bayer has brought the restriction on neonicotinoid use in the Europe before the Court of Justice of the European Union in order to clarify the legal basis of the Commission's decision. This decision is based on an assessment by the efsa that in turn is based on neither a validated nor an officially recognized risk assessment system. With a view to future investment decisions, the company is primarily asking that the court clarify the regulatory framework (Bayer, 2015, p. 122).

To summarize, the most frequently used defiance strategy used by Bayer is *F: Critical of legislation and/or regulations about GMOs (6/16)*. The next strategic response discussed is manipulation.

4.1.2.3.2.2 Manipulation¹⁸⁴

The fourth strategic response discussed is manipulation. Manipulation included statements made about being politically active, and involved with governments to create or change policy regarding global seed and agrochemical or chemical legislation. Bayer has stated that it believes that it has a duty to shape political opinion on legislation that may affect the company's operations:

Bayer regards itself as a member of society. From that it derives a duty and a right to play a competent role in shaping political opinion. At the same time, Bayer is one of the companies that is regularly impacted by new regulations. We therefore have an interest in ensuring that statutory and other regulations are based on the actual situation. In 2004/2005 our political activities centered on proposed legislation on energy policy (trading in emissions allowances), the review of European Chemicals legislation (reach) and genetic engineering (biopatents) (Bayer, 2005c, p. 30).

Similarly, in 2013 the company stated:

The underlying conditions in which our company operates are shaped by authorities, legislators and politicians. Our political stakeholders include, in particular, political parties, ministries, subordinate authorities, foundations and political interest groups that have a decisive influence on the framework conditions in which our business operates. At the same time, they have an interest in industry's expertise and economic contribution. Our

¹⁸⁴ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.

active participation in political decision-making processes is not only democratically legitimate, it is also explicitly called for by essential players, for example through committees and expert and working groups (Bayer, 2013, p. 91).

Bayer has stated that it has engaged in political lobbying that focuses on acceptance of biotechnology:

In 2015, Bayer's political lobbying again focused on the acceptance of products and technologies in society, on submitting proposals for creating sustainable healthcare systems, on dismantling obstacles to innovation, on chemicals and energy policy, on trade policy and on climate protection. Bayer actively promotes the protection of intellectual property in order to be able to continue developing innovative products. In addition, Bayer makes suggestions relating to the regulatory framework for crop protection products and seeds. More information on our political principles can be found on the internet (Bayer, 2015, p. 83).

Bayer has also stated the importance of gaining input from political players. In 2015, the company stated: *"It is important to approach key social and political players right from the start of a new project and, early on, to canvass their support, identify risks and opportunities and seek open dialogue"* (Bayer, 2015, p. 82). Moreover, in 2012, the company made the following assertion:

Within the Bayer Group, the public and Governmental Affairs Committee is responsible for the strategic planning of Bayer's political work. This includes especially dealing with specific political matters, as well as specifying the company's political positions. In 2012 Bayer's political lobbying [55] again focused on the acceptance of products and technologies in society, fostering and recognizing innovation, sustainable healthcare systems, chemicals management, and energy policy and climate protection (Bayer, 2012, p. 27).

Bayer CropScience also works with organizations such as European Crop Protection Association and the German Agrochemical Industrial Association:

Bayer CropScience will make its experience and skills available in order to support the search for suitable solutions in cooperation with associations such as the European Crop Protection Association (ecpa) and the German agrochemical industrial association Industrieverband Agrar (iva) (Bayer, 2008b, p. 100).

Bayer also frequently used fear tactics to gain public approval. An example is from 2008, when the company states: *"[...] we are focusing clearly on the global megatrends—including in particular the development of the world population and the associated issues of safeguarding food supplies, healthcare provision, energy efficiency and effective climate protection"* (Bayer, 2008b, p. 5).

Bayer has also stated its commitment to training farmers on agricultural methods. For instance, in 2013 the company stated: “Bayer CropScience has since offered nearly 100 training workshops in the villages. The farmers learn first-hand in their own language, Kaqchikel, what they have to do to keep their export certification and stay in business” (Bayer, 2013, p. 18). Moreover, in 2014, the company stated:

A new training program has the primary goal of teaching young people in particular more about food and agriculture. It includes visits to CropScience facilities so people can see for themselves how contemporary sustainable agriculture looks in practice, as well as offering scholarships and running a program for fostering the exchange of ideas about the future of agriculture (Bayer, 2014, p. 83).

Bayer also uses anecdotal evidence and storytelling to persuade consumers. For instance, in their 2015 Integrated Report, the company described: “On his farm in Monument, Kansas, U.S., Craig Reed is battling the consequences of persistent drought in particular. He’s hoping for new wheat varieties and a broader spectrum of innovative herbicides” (Bayer, 2015, p. 24). To summarize, the most commonly used manipulation technique used by Bayer was *L: Use of fear tactics (13/16)* followed by *H: Providing education/training (12/12)* and *I: Political advocacy/lobbying (12/12)*. The next strategic response discussed is destigmatization.

4.1.2.3.2.3 Destigmatization¹⁸⁵

The fifth and final strategic response discussed is destigmatization. Destigmatization, or efforts to reframe industry activities in terms of sustainable agriculture were frequently found. Specifically, Bayer often used the term sustainable agriculture to refer to their activities in the seed and agrochemicals business. They did this to reframe the ways investors see the industry as a whole. An example is from 2014 when the company stated:

Sustainable agriculture, higher crop yields and improved crop quality are becoming increasingly important. Global agricultural production must increase by approximately 60% by 2050 in order to ensure adequate nutrition for a growing world population despite the limited amount of arable land and the increased demand for animal feed and renewable raw materials. CropScience is aligning its corporate planning to these long-term trends in the agricultural markets (Bayer, 2014, p. 59).

Another example is from 2004, when the company stated:

Sustainable agriculture must ensure an efficient equilibrium between economic success, ecological responsibility and social acceptance. Bayer CropScience (BCS) provides agricultural technologies and solutions that help to safeguard harvests, reduce harvest

¹⁸⁵ Destigmatization is the second-order theme with six first-order categories: N: Sustainable Agriculture

losses, improve the quality of products, and optimize the use of natural resources. In this way, BCS makes an important contribution toward meeting the global demand for food and animal feedstuff (Bayer, 2004, p. 25).

Another example is from 2010 when the company tries to reframe the industry in terms of sustainable agriculture:

Sustainable agriculture takes into account economic, ecological and social aspects to produce high-quality and safe agricultural products. It minimizes the environmental impact of farming and protects biological diversity as far as possible. The social and economic situation of the people living in the cultivation regions is also improved thanks to simpler cultivation methods and higher crop yields. "In the long run, we believe there is no real alternative to sustainable agriculture as an efficient and competitive way of ensuring we can feed the world," says van der Broek (Bayer, 2010, p. 19).

To summarize, Bayer engaged in high destigmatization behaviors, obtaining *N: Sustainable Agriculture* (12/16). The following section provides a summary of the strategic responses used by Bayer in response to stigma.

4.1.2.4 Summary Description and Table

To recap, Bayer engaged in moderate avoidance strategies, very high dilution strategies, very low defiance, high manipulation and high industry destigmatization strategies. The most frequently used avoidance strategy for Bayer, was the concealment of hostile audiences' viewpoints but the firm also avoided the mention of stigma altogether. In terms of dilution, the company often tried to disassociate itself from the industry by making their corporate strategy about issues not directly related to agricultural biotechnology.

In terms of active strategic responses, Bayer did not frequently engage in defiance strategies. In terms of manipulation strategies, the company used all manipulation strategies as time passed and engaged in them frequently from 2004 onwards. In terms of destigmatization, the company engaged in industry reframing most of the years under investigation, and every year starting in 2004. See *Table 32: Bayer Strategic Responses to Stigma*, *Table 33: Bayer Strategic Responses to Stigma Summary Table* and *Table 34: Bayer Supportive Evidence Illustrative quotations*.

Table 32: Bayer Strategic Responses to Stigma¹⁸⁶

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses				Active Strategic Responses									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	X	–	X	X	–	–	–	–	–	–	X	–	–	–
2001	X	–	–	X	–	–	–	–	–	–	–	–	–	–
2002	X	–	X	X	–	X	–	–	–	–	–	–	–	–
2003	X	–	X	X	–	X	–	–	–	–	–	X	–	–
2004	–	–	X	X	–	X	–	X	X	–	–	X	X	X
2005	–	–	X	X	–	X	–	X	X	–	X	X	X	X
2006	X	–	X	X	–	–	–	X	X	–	–	X	–	X
2007	–	–	X	X	–	–	–	X	X	–	X	X	X	X
2008	–	–	–	X	–	–	–	X	X	–	X	X	X	X
2009	–	–	–	X	–	–	–	X	X	X	X	X	X	X
2010	–	–	X	X	–	–	–	X	X	X	X	X	X	X
2011	–	–	–	X	–	–	–	X	X	X	X	X	X	X
2012	X	–	–	X	–	–	–	X	X	X	X	X	X	X
2013	X	–	X	X	X	–	–	X	X	X	X	X	X	X
2014	X	–	X	X	X	X	–	X	X	X	X	X	X	X
2015	X	–	X	X	X	X	–	X	X	X	X	X	X	X
SUM ¹⁸⁷	9	0	11	16	3	6	0	12	12	7	11	13	11	12
	20/48 = 42%			16/16 = 100%	9/48 = 19%			66/96 = 69%						12/16 = 75%
Usage	Moderate			Very High	Very Low			High						High

Source: Own Elaboration

Table 33: Bayer Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)			X		
Low (21–40%)					
Moderate (41 - 60%)	X				
High (61–80%)				X	X
Very High (81 - 100%)		X			

Source: Own Elaboration¹⁸⁸¹⁸⁶ (X) marks the presence of first-order category, while (–) marks the absence of the first-order category¹⁸⁷ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.¹⁸⁸ Percentages obtained from Table 32: Bayer Strategic Responses to Stigma.

Table 34: Bayer Supportive Evidence—Illustrative Quotations

First-Order Categories	Supportive Evidence
AVOIDANCE	
A ¹⁸⁹ = <i>Avoiding mention of existence of stigma</i>	1. "In Canada, genetic engineering has already helped to boost the oil yield of canola by up to 30 percent compared with conventional varieties. It is clear that modern breeding techniques and plant biotechnology can make a major contribution to feeding the world, but this presupposes greater acceptance of this technology so that it can be used on a large scale worldwide" (Bayer, 2008a, p. 39).
B = <i>Escape Behaviors</i>	NA ¹⁹⁰
C ¹⁹¹ = <i>Concealment of hostile audiences</i> ¹⁹² <i>viewpoint</i>	2. "We understand the concerns about genetically modified organisms (GMOs) expressed by society, but we are convinced that GMOs do not represent a safety risk when the legal requirements and corresponding safety checks are observed" (Bayer, 2008b, p. 98). STIGMA DILUTION
D = <i>Expectation Blurring</i>	3. "Bayer's sustainability concept is consistently aligned to this goal: With its products Bayer wants to help effectively address societal megatrends and challenges such as climate change, inadequate global healthcare or the scarcity of water and food. We also consistently align our own business processes to sustainable development criteria along the entire value chain. Through our social responsibility, furthermore, we also contribute to improving living conditions in the communities in which our sites are located and supporting the future prospects of others" (Bayer, 2008b, p. 18).
DEFIANCE	
E = <i>Defiance against those who are against GMOs</i>	4. "I am concerned by the growing number of critical stakeholders whose claims and demands are based on emotions and beliefs rather than on scientific facts" (Bayer, 2014, p. 6).
F =	5. "The introduction of new regulations, data requirements or test guidelines is a normal part of enhancing safety assessments for Crop Protection products. However, unpredictable new

¹⁸⁹ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation

¹⁹⁰ No findings for Bayer.

¹⁹¹ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences' viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences' viewpoints/concerns is shown as an illustrative quotation.

¹⁹² Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuysen (2009), Tracey and Phillips (2016) and Vergne (2012).

Critical of legislation and/or regulations about GMOs	requirements and inappropriate deadlines have led to numerous delays of registrations of Crop Protection products in the past, especially in the authorization processes in the EU and in the NAFTA countries" (Bayer, 2005b, p. 62).
G = Critical of GMO labeling	NA ¹⁹³
MANIPULATION	
H = Providing education/training	6. "Bayer is investing in training farmers worldwide in sustainable methods of cultivation. This training takes place as part of the global 'Food Chain Partnerships,' for instance. In numerous projects across all five continents, farmers receive advice and support on questions relating to sustainable agriculture and integrated production according to the standards set by good agricultural practices (see page 58)" (Bayer, 2014, p. 46).
I = Political advocacy/lobbying	7. "In 2004/2005 our political activities centered on proposed legislation on energy policy (trading in emissions allowances), the review of European Chemicals legislation (reach) and genetic engineering (biopatents)" (Bayer, 2005c, p. 30).
J = Explicit intent to change perceptions of consumers	8. "In 2015, Bayer's political lobbying again focused on the acceptance of products and technologies in society, on submitting proposals for creating sustainable healthcare systems, on dismantling obstacles to innovation, on chemicals and energy policy, on trade policy and on climate protection. Bayer actively promotes the protection of intellectual property in order to be able to continue developing innovative products. In addition, Bayer makes suggestions relating to the regulatory framework for crop protection products and seeds. More information on our political principles can be found on the internet" (Bayer, 2015, p. 83).
K = Use of anecdotal evidence/storytelling	9. "For 72-year-old Mimms, FiberMax® came just at the right time: 'We desperately needed something new—a jump in quality that would ensure our survival in this tough business.' For Soyka and Arioli, what Mimms has to say underscores the goal of their work: 'Today it's no longer enough just to boost the plants' productivity. It is every bit as important that we develop ways to improve specific properties of cotton fibers'" (Bayer, 2005a, p. 64).
L = Use of Fear Tactics	10. "With our innovations we address major societal challenges on a global scale. Around 9.7 billion people will be living on our planet by 2050. How can humankind succeed in feeding so many people, especially in regions where agriculture is difficult? By developing better seeds and new products to protect crops, Bayer is helping to ensure an adequate food supply for the world's population" (Bayer, 2015, p. 6).
M =	11. "CropScience is represented on the boards of the international crop protection association CropLife International, the regional associations (CropLife America, Latin America, Africa &

¹⁹³ No findings for Bayer.

Membership in Agrobiotechnology Industry Associations	Middle East) and the European Crop Protection Association (ECPA), and the CEO of Covestro is the President of Plastics Europe, the association of plastics manufacturers" (Bayer, 2015, p. 83).
DESTIGMATIZATION	
N = Sustainable Agriculture	12. "The demand for food will continue to rise, whereas agricultural land will decrease in area. What's more, the progression of climate change is threatening crops and harvests, due to factors such as extreme weather conditions and growing populations of harmful insects in certain regions. Sustainable agriculture will only be possible in the future through the integrated use of crop protection agents and innovative seeds" (Bayer, 2009, p. 26).

Source: Own Elaboration

4.2 Quadrant 2

4.2.1 CASE STUDY #3: DOW CHEMICAL

4.2.1.1 Description of the Firm

The third firm under investigation is The Dow Chemical Company, or more commonly referred to as “Dow.” The company was founded in 1897 by chemist Herbert H. Dow (Dow, 2017c), with the purpose of using bromine¹⁹⁴ in order to produce bleach (Eccles, Serafeim et al., 2012). Today, Dow has operations in the following segments: Agricultural Sciences, Consumer Solutions, Infrastructure Solutions, Performance Materials & Construction, and Performance Plastics (Dow, 2017i). See Figure 35: Dow Chemical Segments.

Figure 35: Dow Chemical Segments

Agricultural Sciences	Consumer Solutions	Infrastructure Solutions	Performance Materials & Construction	Performance Plastics
<ul style="list-style-type: none"> •Seeds •Crop Protection 	<ul style="list-style-type: none"> •Consumer Care •Dow Automotive Systems •Dow Electronic Materials 	<ul style="list-style-type: none"> •Dow Building & Construction •Dow Coating Materials •Energy & Water Solutions •Performance Monomers 	<ul style="list-style-type: none"> •Chlor-Alkali and Vinyl •Epoxy •Industrial Solutions •Polyurethanes 	<ul style="list-style-type: none"> •Dow Elastomers •Dow Electrical and Telecommunications •Dow Packaging •Hydrocarbons

Source: Information from Dow (2017i)

The firms’ global headquarters is located in Midland, Michigan, U.S. (Aldridge, Jul 31 2017). As of 2017, Dow has a market capitalization of \$77 billion, assets of \$79.5 billion, profits of \$4.3 billion, and sales of \$48.1 billion (Fortune, 2017b). The company ranked 113th on Forbes Global 2000 (Forbes, 2017d) and 196th on Fortune’s Global 500 (Fortune, 2017b). Moreover, as of 2015, Dow was the 2nd largest chemical company in the world, behind BASF (Tullo, Jul 27 2015). In 2015, Dow had almost 50,000 employees globally and was present in approximately 180 countries, with over 6,000 products, and 179 sites in 35 countries (Dow, 2017j). The company has been listed on NYSE since 1937 under ticker symbol DWDP (Dow, 2016c). Dow is also a component of the following equity indices: Chemicals, DJ U.S. Commodity Chemicals, Fortune 500 Industrial, S&P 100 Diversified Chemicals Index, S&P 500, S&P 500 Diversified

¹⁹⁴ Bromine is “a nonmetallic halogen element that is isolated as a deep red corrosive toxic volatile liquid of disagreeable odor” (Merriam-Webster, 2017d).

Chemicals (Sub Ind), S&P 900 Diversified Chemicals (Sub Ind), S&P Composite 1500 Diversified Chemicals (Sub Ind), S&P Top 100 (Dow, 2017m).

Strategic Purpose, Principles and Values

Dow aims to tackle global challenges with their products. More specifically, the company states: “As earth’s population continues to rise in the years to come, current and future generations will face huge environmental and sustainability challenges. Dow and the scientific community recognize these global challenges and are confronting them head on” (Dow, 2017f). Examples of global challenges the firm responds to include: adequate housing for a growing world population, the creation of sustainable consumer goods, global energy production, global demand for food, access to proper sanitation, access to infrastructure, access to transportation and access to water (Dow, 2017f). See *Figure 36: Dow’s Responses to Global Challenges*.

Figure 36: Dow Responses to Global Challenges

Building & Construction <ul style="list-style-type: none"> • By 2030, the UN estimates that 40% of the world's population will lack adequate housing 	Consumer & Lifestyle <ul style="list-style-type: none"> • By 2030, the world's middle class will double in size - as will the need for more sustainable consumer goods 	Energy & Climate Change <ul style="list-style-type: none"> • By 2050, global energy use is projected to grow by two-thirds 	Food & Agriculture <ul style="list-style-type: none"> • By 2050, global demand for food could increase by 60%
Health & Wellness <ul style="list-style-type: none"> • 2.5 Billion people lack access to proper sanitation 	Infrastructure <ul style="list-style-type: none"> • The world will need up to \$67 trillion in infrastructure investments by the year 2030 	Transportation <ul style="list-style-type: none"> • By 2050, global transportation volume for passengers and goods will more than double 	Water <ul style="list-style-type: none"> • 1.8 billion people will live in water-scarce regions by 2025

Source: Information from Dow (2017f)

Over the years, Dow’s growth strategy was through “geographic expansion, technology innovation and sophisticated management of capital investments” (Eccles, Serafeim et al., 2012, p. 2). Following Dow’s purchase of Union Carbide Corporation (UCC) in 1999 (Warran, Aug 5 1999) for \$9.3 billion (Deutsh, Aug 5, 1999), Dow became the second-largest chemical company in the world, behind DuPont (n.a., Aug 4 1999). Dow’s Mission, Vision, Values and Corporate Strategy is summarized in *Table 35: Dow Mission, Vision, Values and Corporate Strategy*.

Table 35: Dow Mission, Vision, Values and Corporate Strategy

Mission	Vision	Values	Corporate Strategy
To passionately create innovation for our stakeholders at the intersection of chemistry, biology, and physics	Maximize long-term value per share by being the most valuable and respected science company in the world	<ul style="list-style-type: none"> • Integrity • Respect for People • Protecting Our Planet 	Invest in a market-driven portfolio of advantaged and technology-enabled businesses that create value for our shareholders and customers

Source: Information from Dow (2017e)

4.2.1.2 Exposure to Stigma

Agricultural Segment

Dow AgroSciences LLC¹⁹⁵ is a wholly owned subsidiary of Dow Chemical (Dow, 2016d). Dow AgroSciences LLC's global headquarters is situated in Indianapolis, Indiana (2017g). Dow's agricultural business began in the 1950s (Dow, 2016d). In 1960, Dow opened its agricultural research center in Michigan (Dow, 2016a). In 1989, Dow entered into a Joint venture (JV) agreement with the company Elanco Plant Sciences (a subsidiary of Eli Lilly and Company) (Dow, 2016a). The result of this JV was the creation of DowElanco (Dow, 2016a). Eight years after, in 1997, Dow Chemical acquired complete ownership of DowElanco and renamed it Dow AgroSciences (Dow, 2016a).

Today, Dow AgroSciences has over 9,000 employees globally, with 2016 sales of \$6.2 billion (2017a). The company specializes in crop protection products and seeds. Their products include: insecticides, herbicides, fungicides, fumigants¹⁹⁶, pest management, nitrogen stabilizers¹⁹⁷, seeds, traits as well as canola and sunflower oils (Dow, 2017k). Today, the company has presence in over 40 countries with products being sold in over 130 countries around the world (Dow, 2017k).

Dow AgroSciences has three corporate values: Integrity, respect for people, and protecting our planet. See *Table 36: Dow AgroSciences Values* (Dow, 2017n).

¹⁹⁵ A limited liability company (LLC).

¹⁹⁶ "Fumigation is a pest control method in which a pesticide gas or vapor is released into the air or injected into the soil to kill or eliminate pests" (CDC, Jan 10, 2017).

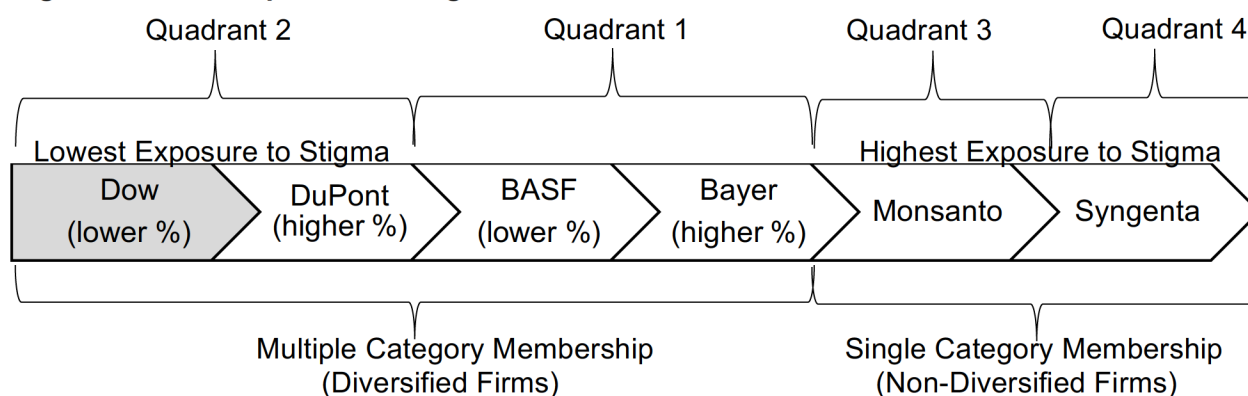
¹⁹⁷ Nitrogen stabilizers act by storing nitrogen in the root zone longer to optimize the yield and profit potential of corn, cereal and canola crops (Dow, 2017h).

Table 36: Dow AgroSciences Values

Integrity	We believe our promise is our most vital product—our word is our bond. The relationships that are critical to our success depend entirely on maintaining the highest ethical standards around the world.
Respect for People	We believe in the inherent worth of all people. We, the employees of Dow AgroSciences, are the engine of value creation; our imagination, determination and dedication are essential to growth.
Protecting Our Planet	We believe in protecting the world's resources. Dow AgroSciences' sustainability journey involved the world's best problem solvers working on the world's biggest challenges. The decisions we make, the innovations we deliver and the goals we achieve are all driven by our intent to "set the Standard for Sustainability," making the world safer, cleaner and greener for generations to come.

Source: Dow (2017n)

Dow has global headquarters located in the U.S. an area of lower stigma, but is a diversified firm operating in both stigmatized and non-stigmatized industries. See *Figure 37: Dow Exposure to Stigma* to see a comparison of Dow's exposure to stigma relative to the other five firms of the Big Six. Compared to DuPont (also in quadrant 2), the firm has lower percentage of sales in agriculture¹⁹⁸, and consequently has lower stigma than DuPont.

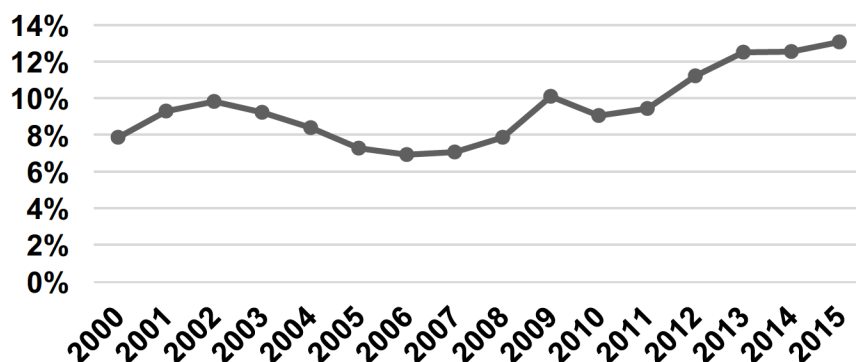
Figure 37: Dow Exposure to Stigma¹⁹⁹

Source: Own Elaboration

The percentage of sales from Dow emerging from their agricultural sales is a small percentage of their total sales, and has been like this over time. See *Figure 38: Dow Agricultural Sales Percentage*.

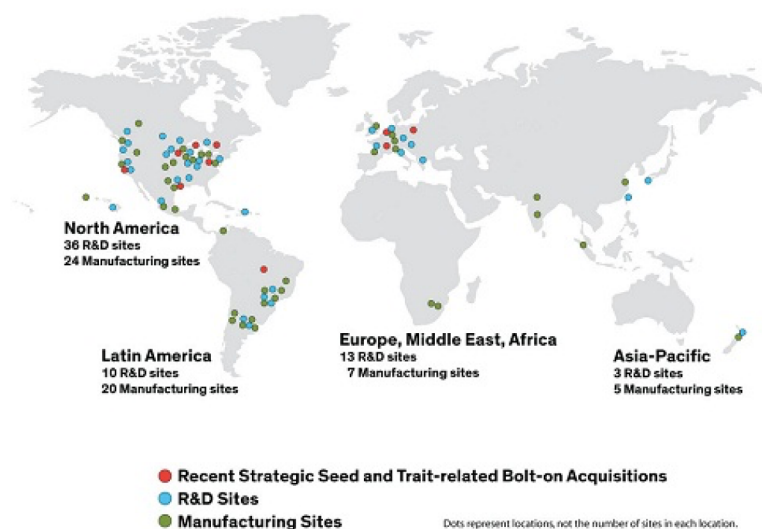
¹⁹⁸ Percentage of sales in agriculture in 2015.

¹⁹⁹ DuPont has 5th highest exposure to stigma when it comes to the *Big Six firms*. Syngenta has the highest exposure to stigma (1st highest), Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

Figure 38: Dow Agricultural Sales Percentage

Source: Annual Reports²⁰⁰

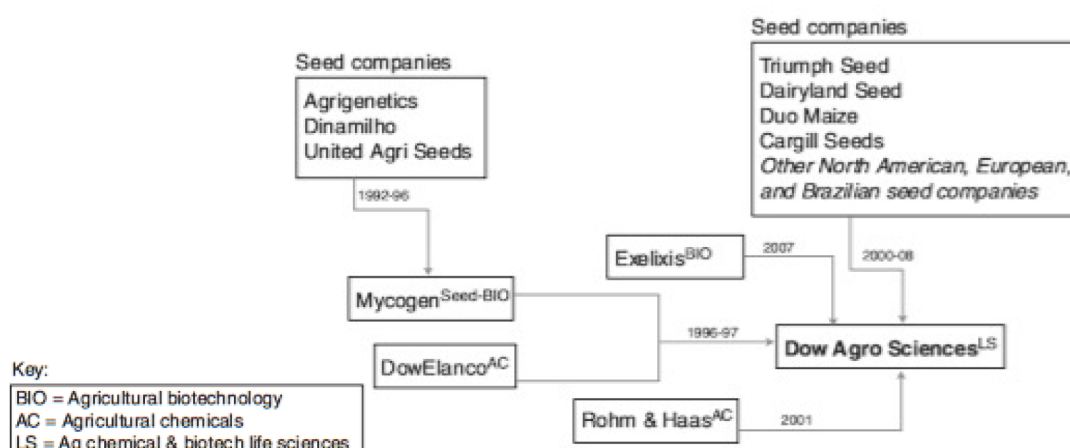
Today, the firm has locations in over 40 countries around the world, with products being sold in over 130 countries (Dow, 2017l). Dow AgroSciences has 2000 scientists and 61 research sites globally (Dow, 2017l). See *Figure 39: Dow AgroSciences Worldwide*.

Figure 39: Dow AgroSciences Worldwide

Source: Dow (2017o)

The formation of today's Dow AgroSciences was due to a number of mergers and acquisitions (Fuglie, Heisey et al., Dec 2011). The company's largest acquisition was Mycogen Corporation (Johnson & Melkonyan, 2003). Other acquisitions were relatively small companies that operated in the seed and biotechnology industry (Johnson & Melkonyan, 2003). See *Figure 40: Formation of Dow AgroSciences*.

²⁰⁰ Data compiled from Annual Reports and graphed. Figures rounded to the nearest percent.

Figure 40: Formation of Dow AgroSciences

Source: Adapted from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009).

Over the years, Dow has undergone many acquisitions and agreements²⁰¹ in the agricultural sector. See *Table 37: Dow Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets* for a detailed breakdown. As the table shows, most of the acquisitions were made in Seeds.

Table 37: Dow Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets

Dow							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides	Total	Pesticides	Seeds	Biopesticides	Total
7	28	0	35	25	25	2	52

Source: Adapted from Pelaez and Mizukawa (2017, p. 3)

Between the years of 2006 and 2014, Dow AgroSciences has increased their investment in R&D by “more than doubl[ing] the square footage in laboratories for seeds; more than 77% additional square footage for greenhouses; more than 90% additional acreage at research and development field stations” (Dow, 2017d). The company estimates that to successfully launch a new trait in the plant biotechnology sector, it takes them 13.1 years and incurs costs of \$136 million (Dow, 2017b). Moreover, a crop protection chemical incurs costs of \$256 million and

²⁰¹ Agreements are described by Pelaez and Mizukawa (2017, p. 1) as: “cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined.”

takes 10 years (Dow, 2017b). Dow's agricultural solutions pipeline is illustrated in *Figure 41: Agricultural Solutions Pipeline*. The pipeline goes from discovery to pre-development, development, launch, commercialization, new applications and management of existing business (Dow (2017b)).

Figure 41: Agricultural Solutions Pipeline



Source: Dow (2017b)

Now that context has been provided regarding Dow's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

4.2.1.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by Dow will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for Dow. See *Table 38: Dow Chemical Strategic Responses to Stigma*, *Table 39: Dow strategic Responses to Stigma Summary Table* and *Table 40: Dow Supportive Evidence—Illustrative Quotations*.

4.2.1.3.1 Passive Coping Strategies

4.2.1.3.1.1 Avoidance²⁰²

The first strategic response discussed is avoidance. Although Dow Chemical was mixed when it came to avoidance of stigma. Some years, the firm explicitly engaged in the topic of

²⁰² Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

consumer acceptance issues, while other years, the topic was vaguely mentioned. For instance, in 2004, they did not explicitly mention the existence of stigma, but instead made vague statements regarding general obligations to stakeholders:

We recognize that Dow's activities impact broadly across the social sphere: the people we employ around the globe, the communities in which we operate, the end-users of our products and the governments and municipalities that depend on the revenues we generate. Throughout 2004, we worked diligently to meet our obligations to each of those groups: to deliver on their expectations, to address their concerns, and to respond openly and honestly to their questions and their issues (Dow, 2004, p. 12).

However, in 2009 and onwards the company made a conscious effort to acknowledge the existence of consumer concerns and scientific, philosophical and ethical implications of biotechnology. For instance, when the company partnered with GMO Answers.com, it made a deliberate effort to help inform consumers. This is illustrated in the following statement:

Dow AgroSciences, as a member of The Council for Biotechnology Information (CBI), supports the GMO Answers initiative to make information about biotechnology in food and agriculture easier to access and understand. A key component of the GMO Answers initiative is a central online resource for information on GMOs, their background, use in agriculture, and research data. Consumers can go to GMOAnswers.com and submit questions. Scientists, health and safety professionals, farmers, and other independent experts, including Dow AgroSciences representatives, provide answers (Dow, 2015b, p. 89).

Moreover, in 2013, the company made a commitment to pursuing biotechnology in a responsible manner:

Dow has adopted the following principles to guide its decision-making in applying biological knowledge and techniques to develop products and services for the benefit of our customers, shareholders and society. We will pursue biotechnology in alignment with Responsible Care®, Dow's Values, and the Code of Business Conduct. We recognize that the unique scientific, philosophical and ethical implications of biotechnology must be considered (Dow, 2013, p. 31).

To summarize, the most commonly used avoidance strategy for Dow was and C: *Concealment of hostile audiences' viewpoint* (7/16) followed by A: *Avoiding mention of existence of stigma* (5/16). The next strategic response discussed is dilution.

4.2.1.3.1.2 Dilution²⁰³

The second strategic response discussed is dilution. The company described its corporate strategy as: “We use innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world” (Dow, 2011b, p. 85). The company engaged in dilution strategies in which their corporate strategy and/or mission involves blurring stakeholder expectations. Dow puts forth the idea that the company’s mission is to contribute positive changes to the world, and benefit mankind. For instance, in 2008, the company stated:

In building the Dow of tomorrow, we are focused on driving positive change by addressing some of the greatest challenges confronting society. Because these are the areas of greatest need, they also are among the areas of greatest opportunity. That is why we are focusing our own organic growth around four global megatrends: energy, transportation and infrastructure, health and nutrition, and consumerism. Each of these areas of opportunity requires the scale, breadth and depth of knowledge that Dow holds. In this way, Dow is helping to shape a brighter future, not only for stockholders, but for all of humanity (Dow, 2008, p. 9).

The company also makes grandiose statements regarding their contribution to society:

The Dow Chemical began its own transformation a number of years ago as we considered the impact of four key megatrends that will revolutionize our world in the coming years: health and nutrition, infrastructure, energy, and consumerism. Thorough analysis of these megatrends identified multiple and daunting challenges (Dow, 2010b, p. 11).

Moreover, Dow claims to be catering to the global needs in society. The company claimed to address global challenges with their products. The fact that they do this means they attempt to disassociate themselves from the industry and make it so that at first glance, consumers’ expectations of the firm are blurred. An example is from 2008:

In 2008, one third of Dow’s sales were from products introduced in the past five years, and that innovation continues. Today we have a pipeline of more than 350 major R&D projects focused on global megatrends—energy, transportation and infrastructure, health and nutrition, and consumerism—where high demand for innovation will capture the highest margins. These areas address the world’s most pressing challenges, including alternative energy, energy efficiency, climate change, housing, food supply and safe drinking water. By aligning our innovation with the evolving demands and needs of society, we will create solutions that improve everyday lives, while adding value for our customers and our stockholders (Dow, 2008, p. 11).

The company also uses buzzwords, such as “megatrends”:

²⁰³ Dilution is the second-order theme with only one first-order category: D: Expectation Blurring.

Increasingly aware of the pressure on our world created by an expanding global population, four megatrends serve as the focus of Dow's market-driven strategy. The Company focuses on developing solutions that improve products using Dow's scientific and technological advances. To effectively communicate about how Dow addresses opportunities while understanding and managing risks and impacts, a communication campaign, Solutionism has been initiated (Dow, 2011b, p. 17).

Efforts to dilute stakeholder expectations continue in 2013:

Dow is deploying its research and development skills to help solve the world's most pressing challenges through the lens of the United Nations Millennium Development goals and four market defined megatrends. By focusing on the needs of society, Dow creates solutions that are both far-reaching and broad in benefit. From the food on the table to the technology in our homes, from the glass of water you drink in the morning to the light switch you flip on at night, Dow science is making it possible for people everywhere to live better and more sustainably (Dow, 2013, p. 120).

In sum, BASF engaged in very high stigma dilution strategies to distort stakeholder expectations, obtaining *D: Expectation Blurring (16/16)*. The next strategic responses discussed are the active strategic responses to stigma. These include defiance, manipulation and destigmatization.

4.2.1.3.2 Active Coping Strategies

4.2.1.3.2.1 Defiance²⁰⁴

The third strategic response discussed is defiance. Defiant tactics were used in a very subtle way. This shows that Dow did not want to seem defensive and argumentative when it came to public perception. The company instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. An example is when the company stated: "Although we are committed to engaging in dialogue with others who are similarly dedicated to respecting diversity of opinion and constructive exchange of ideas, our ability to engage is oftentimes limited by the existence of pending litigation" (Dow, 2009b, p. 82).

In 2013, the company listed the Coalition Against the Deceptive Food Labeling Scheme (Dow, 2013, p. 33) as an organization in which they take part. This shows defiance against GMO food labeling. However, the company did not discuss in depth how they felt about this issue. It was merely briefly listed alongside other organizations in which they take part. Given the company's strategy of diluting stigma, the fact that Dow used little defiance tactics makes strategic sense. Using defiance strategies would bring attention to their stigmatized activities and thus

²⁰⁴ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

prevent the firm from shielding themselves from stigma. To summarize, the only defiance strategy used by Dow was *G: Critical of GMO Labeling (1/16)*. The next strategic response discussed is manipulation.

4.2.1.3.2.2 Manipulation²⁰⁵

The fourth strategic response discussed is manipulation. Manipulation included statements made about being politically active, and involved with governments to create or change policy regarding global seed and agrochemical or chemical legislation. Dow Chemical made very general statements about being politically active, without drawing attention to stigma. For example, the statements the company made were very broad and didn't bring attention to any particular industry, product or actions. For instance, in 2000, the company stated: "We will seek input and promote partnerships between industry, government, nongovernment organizations, communities and other key stakeholders to focus on responsible solutions to common problems and concerns" (Dow, 2000b, p. 2). In 2013, similarly vague statement was made: "By teaming up with governments, we can catalyze more rapid sustainable development Dow actively works with government officials to identify the most pressing challenges facing the areas where we do business" (Dow, 2013, p. 23). Another example of their commitment to political advocacy, without specific mention of the stigmatized business is illustrated in 2001:

Democracy means that everyone has a voice in the political process. We believe that discussion and debate by all groups in society results in better laws. It is Dow's responsibility to shareholders and employees to assure that our interests are represented before legislative and regulatory bodies around the world. To that end, Advocacy, one element of our 12-Point Sustainable Development Operating Plan, calls for proactive engagement on topics important to Dow. Dow's values and commitment to transparency are integrated in our advocacy programs. Dialogue, either direct or through trade and business associations, with policymakers, non-governmental organizations and other stakeholders is a key element of those programs, along with employee political involvement and grassroots initiatives (Dow, 2001b, p. 5).

Despite making vague statements, occasionally the firm made statements specific to the stigmatized industry. For instance, in 2009, the firm stated:

Dow AgroSciences has made a commitment to scientific, advocacy and business strategies that will continue to improve our freedom to operate and enhance our position as one of the leaders in this exciting field. Discovery is the engine that drives the commercialization of innovative genetic solutions for new and improved agricultural

²⁰⁵ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.

options for a multitude of food and non-food uses. We know that discovery rarely rewards the unprepared (Dow, 2009b, p. 81).

Moreover, in 2009, the company stated it worked together with Australian policy experts to create politically viable solutions. Dow mentions “food” but the statement is still vague and not specific to agricultural biotechnology:

U.S. Studies Center announces the Dow Sustainability Program, which will bring together academic and policy experts from Australia and the U.S. to develop action-oriented solutions to a range of sustainability challenges concerning energy, water, food and biodiversity that are technologically innovative, commercially scalable and politically viable (Dow, 2009a, p. 7).

Another manipulation tactic used includes the practice of training techniques for farmers. The reason why this is a manipulation strategy is because the information provided to the farmers will no doubt be information that will benefit Dow and the company’s products, without necessarily being in the best interest of the farmers. For instance, in 2014 the company stated:

The project’s main purpose was to ensure the improvement of production techniques and to increase the income of farmers in the village of Bajo del Tigre in Pasacaballos at least 25 percent, by focusing on the implementation of three major components: technical assistance, social support and business training. Through technical assistance and product allocation, Dow, public and private partners are mentoring the agricultural activity in the country by providing training for business generation in order to help these communities be productive and self-sustainable (Dow, 2014b, p. 149).

The company also uses fear tactics to manipulate consumer perception of GMOs. The company emphasizes the growing world population and the need to come up with innovative solutions to ensure adequate food supplies. For instance, in 2011 the firm stated:

By 2050, the world’s food production systems must support an estimated 9 billion people, with a shrinking base of agricultural land and limited water resources. Dow AgroSciences combines science and technology to discover and develop innovative agricultural solutions for a more sustainable world. We are committed to increasing crop productivity through higher yields, better varieties, and more targeted pest management control. We use innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world (Dow, 2011b, p. 85).

Moreover, the firm engaged in international industry associations as a form of manipulation:

As a member of CropLife International, Dow AgroSciences adheres to a Plant Biotechnology Code of Conduct. This code describes a member companies’ commitment to a common set of business ethics and philosophies regarding biotech stewardship (Dow, 2015b, p. 89).

The company also used anecdotal evidence from farmers in 2011 when they described a Kansas grower, J.D. Hanna, who stated:

“There is a lot of planning that goes into keeping track of your refuge——deciding which field and making sure you meet all refuge requirements. With REFUGE ADVANCED® Powered by SMARTSTAX®, the refuge is already in the bag and I don’t have to worry about any of that. I can just go to the field and plant” (Dow, 2011a, p. 16).

To summarize, the most commonly used manipulation strategy used by Dow was *L: Use of fear tactics* (13/16) followed by *I: Political advocacy/lobbying* (4/16). The next strategic response discussed is destigmatization.

4.2.1.3.2.3 Destigmatization²⁰⁶

The fifth and final strategic response discussed is destigmatization. In terms of destigmatization efforts, Dow only began engaging sustainable agriculture industry reframing in 2010 onwards. However, in recent years, starting from 2010 onwards, the company did use this tactic every year. The reframing of the industry in terms of sustainable agriculture began in 2010 and was consistent up until 2015. Statements where the company reframes the industry is in the following:

Sustainable Agriculture encompasses a number of topics of interest to a diverse audience. Dow AgroSciences products and solutions are designed to solve pressing crop production problems for our customers, boosting agricultural productivity to maximum sustainable levels to help keep pace with the growing needs of our world’s rapidly expanding population (Dow, 2010c, p. 20; 2011b, p. 21; 2012, p. 27; 2013, p. 35).

Another illustrative quotation is from 2011:

We are committed to contributing to community success in sustainable ways. Addressing critical society, economic and environmental needs, the service-minded people of Dow AgroSciences focus their energies in a wide range of community service programs concentrated on sustainable agriculture, STEM education, hunger relief, conservation, cultural endeavors, and the arts. (Dow, 2011b, p. 86)

Moreover, in 2013, the firm used a similar strategy:

Dow AgroSciences combines science and technology to discover and develop innovative agricultural solutions for a more sustainable world. We are committed to increasing crop productivity through higher yields, better varieties, and more targeted pest management control. We use innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world (Dow, 2013, p. 122).

²⁰⁶ Destigmatization is the second-order theme with six first-order categories: N: Sustainable Agriculture

Overall, the company did not engage in destigmatization techniques in all years, and only began in 2010 onwards. To summarize, Dow engaged in low destigmatization behaviors, obtaining *N: Sustainable Agriculture* (6/16). The following section provides a summary of the strategic responses used by Dow in response to stigma.

4.2.1.4 Summary Description and Table

To recap, Dow engaged in low avoidance strategies, very high dilution, very low defiance, low manipulation and low destigmatization tactics. The company engaged in low avoidance of stigma, especially after 2009 where the firm consistently brought attention the fact that concerns exist over their agricultural business. Despite low avoidance, the firm was still able to engage in dilution of stigma. This was done by the firm trying to disassociate itself from the industry by making their corporate strategy about issues not directly related to agricultural biotechnology. In other words, Dow's strategy involves tackling large global challenges which had the affect of blurring stakeholder expectations. Dow did not engage in active strategic responses frequently, and only started engaging in destigmatization in 2010. See *Table 38: Dow Chemical Strategic Responses to Stigma*, *Table 39: Dow strategic Responses to Stigma* and *Table 40: Dow Supportive Evidence—Illustrative Quotations*

Table 38: Dow Strategic Responses to Stigma²⁰⁷

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses				Active Strategic Responses									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	–	–	X	X	–	–	–	–	–	–	–	X	–	–
2001	–	–	–	X	–	–	–	–	X	–	–	–	–	–
2002	–	–	–	X	–	–	–	–	X	–	–	–	–	–
2003	–	–	X	X	–	–	–	–	X	–	–	X	–	–
2004	X	–	X	X	–	–	–	–	–	–	–	X	–	–
2005	X	–	X	X	–	–	–	–	–	–	–	X	–	–
2006	X	–	X	X	–	–	–	–	–	–	–	–	–	–
2007	X	–	X	X	–	–	–	–	–	–	–	X	–	–
2008	X	–	X	X	–	–	–	–	–	–	–	X	–	–
2009	–	–	–	X	–	–	–	–	X	–	–	X	–	–
2010	–	–	–	X	–	–	–	–	–	–	–	X	–	X
2011	–	–	–	X	–	–	–	–	–	–	X	X	–	X
2012	–	–	–	X	–	–	–	–	–	–	–	X	–	X
2013	–	–	–	X	–	–	X	–	–	–	–	X	X	X
2014	–	–	–	X	–	–	–	X	–	–	–	X	X	X
2015	–	–	–	X	–	–	–	X	–	–	–	X	X	X
SUM ²⁰⁸	5	0	7	16	0	0	1	2	4	0	1	13	3	6
	12/48 = 25%			16/16 = 100%	1/48 = 2%			23/96 = 24%						6/16 = 38%
Usage	Low			Very High	Very Low			Low						Low

Source: Own Elaboration

Table 39: Dow Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)			X		
Low (21–40%)	X			X	X
Moderate (41 - 60%)					
High (61–80%)					
Very High (81 - 100%)		X			

Source: Own Elaboration²⁰⁹²⁰⁷ (X) marks the presence of first-order category, while (–) marks the absence of the first-order category²⁰⁸ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.²⁰⁹ Percentages obtained from Table 37: Dow Strategic Responses to Stigma.

Table 40: Dow Supportive Evidence—Illustrative Quotations

First-Order Categories		Supportive Evidence	
		AVOIDANCE	
A ²¹⁰ = Avoiding mention of existence of stigma	1.	“Also, despite consumer concerns, grower acceptance of genetically enhanced crops has been faster than expected in some geographies, reducing reliance on traditional crop-protection chemicals” (Dow, 2000a, p. 26).	
B = Escape Behaviors	NA ²¹¹		
C ²¹² = Concealment of hostile audiences ²¹³ viewpoint	2.	“Concerns regarding the safe use of chemicals in commerce and their potential impact on health and the environment and the perceived impacts of plant biotechnology on health and the environment reflect a growing trend in societal demands for increasing levels of product safety and environmental protection. These concerns could manifest themselves in stockholder proposals, preferred purchasing, delays or failures in obtaining or retaining regulatory approvals, delayed product launches, lack of market acceptance, continued pressure for more stringent regulatory intervention and litigation” (Dow, 2015a, p. 21).	
		STIGMA DILUTION	
D = Expectation Blurring	3.	“We have taken an outside—in approach—based on the global demographics and tectonic shifts that are shaping the future. These megatrends serve as the lens that sharpens our focus and directs our investments” (Dow, 2010a, p. 11).	
		DEFIANCE	
E = Defiance against those who are against GMOs	NA ²¹⁴		

²¹⁰ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation.

²¹¹ No findings for Dow.

²¹² Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences' viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences' viewpoints/concerns is shown as an illustrative quotation.

²¹³ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuyesen (2009), Tracey and Phillips (2016) and Vergne (2012).

²¹⁴ No findings for Dow.

F = <i>Critical of legislation and/or regulations about GMOs</i>	NA ²¹⁵
G = <i>Critical of GMO labeling</i>	4. "Examples of trade, business associations and alliances where Dow is an active member are shown below: Dow participates in numerous additional organizations, including many at the local and regional level: Coalition Against the Deceptive Food Labeling Scheme" (Dow, 2013, p. 33).
MANIPULATION	
H = <i>Providing education/training</i>	5. "The Company and the Academic Model Providing Access to Healthcare (AMPATH), an Indiana University-led consortium, established a collaboration to fight hunger in Africa by providing local farmers with agricultural knowledge intended to improve their crop yields and ultimately quality of life" (Dow, 2014a, p. 48).
I = <i>Political advocacy/lobbying</i>	6. "Among the many challenges facing the world today are those related to Environment, Health and Safety. For example: the availability of fresh water, the management of chemicals (including testing), climate change, dioxin emissions, and the development of promising new technologies such as biotechnology. Resolving these issues is a shared responsibility of all parties in society. A responsibility that we take very seriously. Resolving these issues can often be done most effectively through the formation of broad based partnerships between industry and societal institutions such as government, professional societies and non-governmental groups" (Dow, 2001a, p. 18).
J = <i>Explicit intent to change perceptions of consumers</i>	NA ²¹⁶
K = <i>Use of anecdotal evidence/storytelling</i>	7. "There is a lot of planning that goes into keeping track of your refuge—deciding which field and making sure you meet all refuge requirements. With REFUGE ADVANCED® Powered by SMARTSTAX® the refuge is already in the bag and I don't have to worry about any of that. I can just go to the field and plant" (Dow, 2011a, p. 16).
L = <i>Use of Fear Tactics</i>	8. "By 2050, the world's food production systems must support an estimated 9 billion people, with a shrinking base of agricultural land and limited water resources. Dow AgroSciences combines science and technology to discover and develop innovative agricultural solutions for a more sustainable world" (Dow, 2011a, p. 85).

²¹⁵ No findings for Dow.

²¹⁶ No findings for Dow.

M = <i>Membership in Agrobiotechnology Industry Associations</i>	9. "As a member of CropLife International, Dow AgroSciences adheres to a Plant Biotechnology Code of Conduct. This code describes a member companies' commitment to a common set of business ethics and philosophies regarding biotech stewardship" (Dow, 2015a, p. 89).
DESTIGMATIZATION	
N = <i>Sustainable Agriculture</i>	10. "Dow AgroSciences: Delivering Solutions for Sustainable Agriculture. By 2050, the world's food production systems must support an estimated 9 billion people, with a shrinking base of agricultural land and limited water resources. Dow AgroSciences combines science and technology to discover and develop innovative agricultural solutions for a more sustainable world. We are committed to increasing crop productivity through higher yields, better varieties, and more targeted pest management control. We use innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world" (Dow, 2013, p. 122).

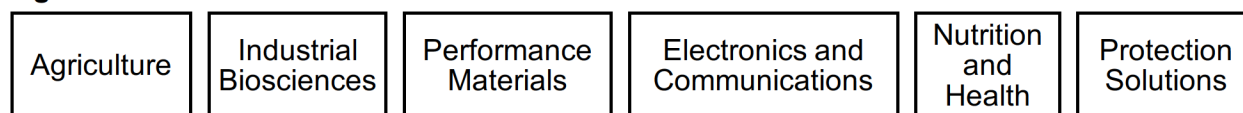
Source: Own Elaboration

4.2.2 CASE STUDY #4: DUPONT

4.2.2.1 Description of the Firm

The fourth case under investigation is DuPont. DuPont also known as E.I DuPont de Nemours and Company was founded in July 1802 in Delaware by Eleuthère Irénée (E.I) DuPont (2017e). At its foundation, 215 years ago, the company produced black powder²¹⁷ and explosives (Britannica, 2016). Today, DuPont is an American conglomerate firm, whose businesses include Agricultural, Industrial Biosciences, Performance Materials, Electronics and Communications, Nutrition and Health, and Protection Solutions (DuPont, 2017b). *See Figure 42: DuPont's Business.*

Figure 42: DuPont Businesses



Source: Information from DuPont (2017b)

DuPont global headquarters are located in Wilmington, Delaware (DuPont, 2017d). As of May 2017, DuPont had a market capitalization of \$69.2 billion, assets of \$40 billion, profits of \$2.5 billion, and sales of \$24.5 billion (Fortune, 2017c). The company was ranked 220th on Forbes Global 2000 (Forbes, 2017e) and 438th on Fortune's Global 500 (Fortune, 2017c).

DuPont conducts scientific research in 150 locations around the globe and is present in 90 countries (DuPont, 2017c). The company is listed on the NYSE under ticker symbol DD (DuPont, 2017k). It is also a component of the DJIA²¹⁸ (CNNMoney, 2017), the S&P 100²¹⁹ and the S&P 500²²⁰. As of 2015, the company had 52,000 employees operating in 90 countries (DuPont, 2016c, p. 1) and was the 8th largest chemical company in the world (Tullo, Jul 27 2015).

²¹⁷ Black powder is defined as "an explosive mixture of potassium nitrate or sodium nitrate, charcoal, and sulfur used especially in fireworks and as a propellant in antique firearms"(Merriam-Webster, 2017c).

²¹⁸ The Dow Jones Industrial Average (DJIA) "is a price-weighted average of 30 actively traded blue-chip stocks, primarily industrials including stocks and trade on the New York Stock Exchange" (NASDAQ, 2017).

²¹⁹ "The S&P 100 Index, a sub-set of the S&P 500, measures the performance of large cap companies in the United States. Known by its ticker symbol, OEX, the index is comprised of 100 major, blue chip companies across multiple industry groups" (NASDAQ).

²²⁰ "The S&P 500 focuses on the large-cap sector of the market; however, since it includes a significant portion of the total value of the market, it also represents the market. Companies in the S&P 500 are considered leading companies in leading industries" (NASDAQ).

Strategic Purpose, Principles and Values

The company currently has three strategic priorities (DuPont, 2017m). These include, agriculture and nutrition, bio-based industrials and advanced materials (DuPont, 2017m). See *Figure 43: DuPont Strategic Priorities*. In terms of agriculture and nutrition, the firm states “we lead the market with practical solutions that yield ample and nutrition food supplies” (DuPont, 2017m).

Figure 43: Strategic Priorities

Agriculture and Nutrition:	Bio-based Industrials	Advanced Materials
<ul style="list-style-type: none"> •We lead the market with practical solutions that yield ample and nutritious food supplies. 	<ul style="list-style-type: none"> •We are building a transformational new business and turning our world-leading biotechnology capability into a recipe for tremendous long-term growth and sustainable solutions for our planet. 	<ul style="list-style-type: none"> •We produce essential, market-leading advanced materials that lead to collaborative breakthroughs for our customers and for DuPont itself.

Source: Information from DuPont (2017m)

DuPont describes its corporate purpose as overcoming global challenges related to food, energy and protection (DuPont, 2017f). See *Figure 44: DuPont Overcoming Global Challenges*. Their official corporate purpose is described as: “DuPont is a science company. We work collaboratively to find sustainable, innovative, market-driven solutions to solve some of the world’s biggest challenges, making lives better, safer, and healthier for people everywhere” (DuPont, 2017f).

Figure 44: DuPont Overcoming Global Challenges

Food	Energy	Protection
<ul style="list-style-type: none"> •Together we can feed the world. 	<ul style="list-style-type: none"> •Together we can build a secure energy future. 	<ul style="list-style-type: none"> •Together we can protect what matters most.

Source: Information from DuPont (2017b)

DuPont’s corporate values include: safety and health, environmental stewardship, respect for people and high ethical behavior (DuPont, 2017n). More specifically, the firms’ official statements about their values are: “Our core values are the cornerstone of who we are, what we stand for and what we do. DuPont businesses help provide safe, sufficient food; ample, sustainable energy; and protection for people and the environment. Even as our company grows and the Earth’s population surges, we have never changed the commitment we share to our core values” (DuPont, 2017n).

4.2.2.2 Exposure to Stigma

Agricultural Segment

DuPont operates in the seed business and crop protection business. DuPont's seed business is known as DuPont Pioneer. See *Table 41: DuPont Agriculture Business*.

Table 41: DuPont Agriculture Business

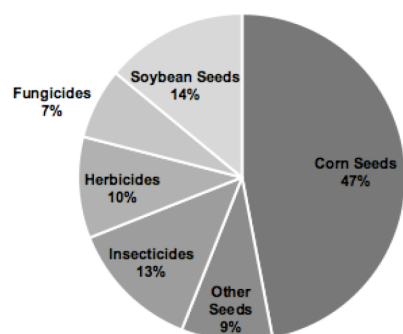
Crop Protection	DuPont Pioneer
<i>Crop Protection Solutions Designed to Help Growers Feed the World:</i> We believe that by working together, we can realize better ways to improve the quantity, quality and sustainability of the world's food supply.	<i>DuPont Pioneer wants to help farmers grow healthier crops:</i> DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics providing high-quality seeds to farmers around the world

Source: DuPont (2017a) and DuPont (2017l)

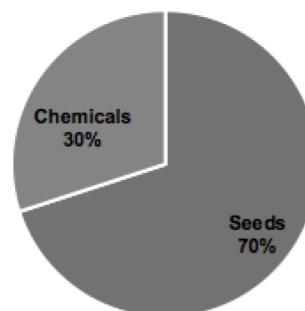
DuPont agricultural sales are primarily in seeds (DuPont, 2016b). See *Figure 45: DuPont Agriculture 2016 Sales*. In 2016, the firms' breakdown of sales was 70% in seeds, and 30% in chemicals DuPont (2016b). Moreover, corn seeds accounted for 47% of sales, other seeds 9%, insecticides, 13%, herbicides 10%, fungicides 7% and soybean seeds 14% (DuPont, 2016b). DuPont sells primarily in the Seeds business (DuPont, 2016b). DuPont's subsidiary, DuPont Pioneer, formerly Pioneer Hi-Bred, is a large producer of seeds with headquarters in Johnston, Iowa (DuPont, 2017i). It sells seeds in almost 90 countries (DuPont, 2017l).

Figure 45: DuPont Agriculture 2016 Sales

(a) By major Product Group



b) By Major Industry

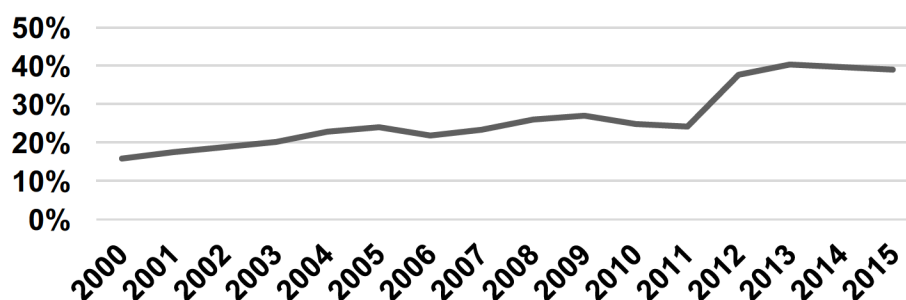


Source: DuPont (2016b, p. 12)

Pioneer was founded by Henry A. Wallace in 1926 (DuPont, 2017j). The company has over 75 production locations, over 100 research locations, and employs over 12,300 employees globally (DuPont, 2017g). DuPont Pioneer's products include: corn, soybeans, sorghum,

sunflower, alfalfa, canola, wheat, rice, cotton, pearl millet²²¹, and mustard and forage²²² additives (DuPont, 2017h). DuPont percentage of total sales in agriculture has varied over time, and grown recently. See Figure 46: DuPont Agricultural Sales Percentage.

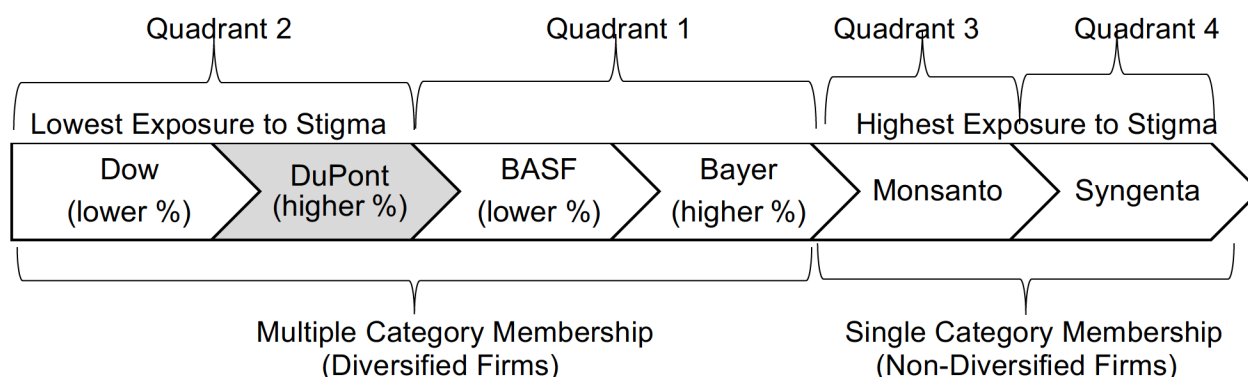
Figure 46: DuPont Agricultural Sales Percentage



Source: Annual Reports²²³

DuPont has global headquarters located in U.S. an area of lower stigma, but is a diversified firm operating in both stigmatized and non-stigmatized industries. See Figure 47: *DuPont Exposure to Stigma* to see a comparison of DuPont's exposure to stigma relative to the other five firms of the Big Six. Compared to Dow (also in quadrant 2), the firm has higher percentage of sales in agriculture²²⁴, and consequently has higher stigma than Dow.

Figure 47: DuPont Exposure to Stigma²²⁵



Source: Own Elaboration

²²¹ Pearl Millet is "a tall cereal grass (*Pennisetum glaucum* synonym *P. americanum*) that has large leaves and dense round spikes and is widely grown for its seeds and for forage" (Merriam-Webster, 2017s).

²²² Forage is "food for animals especially when taken by browsing or grazing" (Merriam-Webster, 2017l).

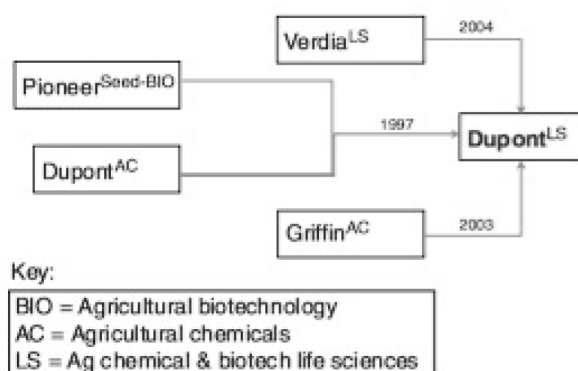
²²³ Data compiled from Annual Reports and graphed. Figures rounded to the nearest percent.

²²⁴ Percentage of sales in agriculture in 2015.

²²⁵ DuPont has 5th highest exposure to stigma when it comes to the *Big Six firms*. Syngenta has the highest exposure to stigma (1st highest), Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

The formation of today's DuPont agricultural segment was due to several mergers and acquisitions. DuPont had acquired 20% of Pioneer Hi-Bred International in 1997 and completed the entire purchase of 100% of the company in 1999 (Harrigan, 2012). In 1999, DuPont acquired Pioneer Hi-Bred international for \$7.7 billion (CNNMoney, Mar 15, 1999). In 2004, the company acquired Verdia's agricultural biotechnology segment for \$64 million (Harrigan, 2012). See *Figure 48: Formation of DuPont*. The company's agricultural segment stems from Pioneer, Verdia, and Griffin (Fuglie, Heisey et al., Dec 2011).

Figure 48: Formation of DuPont



Source: Modified from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009).

The company has also engaged in numerous acquisitions and agreements²²⁶ over time (Pelaez & Mizukawa, 2017). The majority of agreements and acquisitions for DuPont occurred in the seeds business (Pelaez & Mizukawa, 2017, p. 3). See *Table 42: DuPont—Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets*.

Table 42: DuPont Acquisitions and Agreements in the Pesticide, seeds and Biopesticides Markets

DuPont							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides	Total	Pesticides	Seeds	Biopesticides	Total
4	17	1	22	21	19	2	42

Source: Modified from Pelaez and Mizukawa (2017, p. 3)

²²⁶ Agreements are described by Pelaez and Mizukawa (2017, p. 1) as “cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined.”

Now that context has been provided regarding DuPont's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

4.2.2.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by DuPont will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for DuPont. See *Table 43: DuPont Strategic Responses to Stigma*, *Table 44: Du Pont Strategic Responses to Stigma Summary Table* and *Table 45: DuPont Supportive Evidence—Illustrative Quotations*.

4.2.2.3.1 Passive Coping Strategies

4.2.2.3.1.1 Avoidance²²⁷

The first strategic response discussed is avoidance. Signs of avoidance of stigma were moderate for DuPont. The company often mentioned the fact that there were acceptance issues with biotechnology but very rarely addressed GM specific concerns. Examples of when DuPont mentioned the existence of stigma, and therefore did not avoid the issue is in the following: "While there are still a number of regulatory and public opinion challenges in this area, consumer acceptance of biotechnology products is growing" (DuPont, 2001, p. 19). Other statements include those such as the following where DuPont states that the company's sales are impacted by market acceptance of GM technology:

The company's ability to generate sales from such products could be impacted by market acceptance as well as governmental policies, laws and regulations that affect the development, manufacture and distribution of products, including the testing and planting of seeds containing biotechnology traits and the import of commodity grain grown from those seeds. The regulatory environment is lengthy and complex with requirements that can vary by industry and by country. The regulatory environment may be impacted by the activities of non-governmental organizations and special interest groups and stakeholder reaction to actual or perceived impacts of new technology on safety, health and the environment. Obtaining and maintaining regulatory approvals requires submitting a significant amount of information and data, which may require participation from technology providers. The ability to satisfy the requirements of regulatory agencies is

²²⁷ Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

essential to be able to continue to sell existing products or commercialize new products (DuPont, 2013a, p. 9).

Moreover, in 2004, the company admitted acceptance of agricultural biotechnology products had been slower than anticipated:

The primary factors that resulted in the impairment charge in Agriculture & Nutrition were the difficult economic environment in the agriculture sector, slower than expected development of and access to traits based on biotechnology, and a slower than expected rate of acceptance by the public of new agricultural products based on biotechnology (DuPont, 2004c, p. 19).

DuPont rarely lists the reasons why consumer acceptance of GM technology, instead DuPont lists the reasons why the public should accept the technology. For instance, in 2000 the firm made efforts to convince the public of the benefits of this technology:

We clearly understand that our ability to commercialize biotechnology-based products that improve agricultural productivity, enhance the nutritional and health benefits of food, create modern materials with renewable feedstocks, and reduce environmental impacts, requires both the highest standards for safety and public acceptance around the world (DuPont, 2000b, p. 7).

A similar statement was made 13 years later, in 2013:

Our perspective is that new technologies—such as biotechnology and nanotechnology—offer compelling benefits, and should be part of the suite of solutions that help bring safe and nutritious food to the world, decrease our dependence on fossil fuels, and safeguard people and the planet. Therefore societal acceptance of these technologies will be critical (DuPont, 2013b, p. 29).

To summarize, the only used avoidance strategy for DuPont was *C: Concealment of hostile audiences' viewpoint (14/16)*. The next strategic response discussed is dilution.

4.2.2.3.1.2 Dilution²²⁸

The second strategic response discussed is dilution. Throughout the years, DuPont was very active in using dilution strategies. More specifically, the company consistently aligned their corporate strategy in a way that dilutes their association to the stigmatized industry. At first glance, it is not clear that the company operates in the agricultural biotechnology segment. For instance, in 2000 the company described itself in the following way:

We are committed to playing a responsible role in the development of this technology which has the potential to address many global problems including malnutrition, obesity,

²²⁸ Dilution is the second-order theme with only one first-order category: D: Expectation Blurring.

aging diseases, certain types of cancer, soil erosion, water quality and climate change (DuPont, 2000b, p. 7).

In 2009, the company made similar statements regarding their activities and how they tackle megatrends:

Global population growth and associated growth in the middle class are creating distinct needs throughout the world. These needs, which we call megatrends, are providing DuPont the opportunity to bring our unmatched science to the marketplace to create game-changing solutions in constant collaboration with our customers and key partners. Each megatrend presents opportunities for DuPont's collaborative science and solutions (DuPont, 2009, p. 3).

DuPont also makes elaborate statements about their activities and corporate purpose. This is illustrated in their statements made in 2010:

We have attractive growth opportunities supported by market-driven science and fueled by global megatrends associated with population growth. We are allocating resources to drive the highest growth opportunities. Productivity will continue to be a cornerstone of how we operate our company (DuPont, 2010, p. 2).

To summarize, dilution tactics *D: Expectation Blurring (16/16)* were used often for DuPont. The next strategic responses discussed are the active strategic responses to stigma. These include defiance, manipulation and destigmatization.

4.2.2.3.2 Active Coping Strategies

4.2.2.3.2.1 Defiance²²⁹

The third strategic response discussed is defiance. Defiance tactics were not used. DuPont did not want to seem defensive and argumentative when it came to public perception. They instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. An example is from 2005, when the company states: "We have the choice to view major societal concerns like climate change, fossil fuel energy use, the impacts of chemicals to human health and the environment, and the introduction of new technologies such as nanotechnology as things that we must defend" (DuPont, 2005, p. 2; 2006b, p. 2). When DuPont discusses regulations surrounding agricultural biotechnology, the tone is negative, however, it is not flat out defiance. An example is from 2014:

²²⁹ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

The regulatory environment is lengthy and complex with requirements that can vary by industry and by country. The regulatory environment may be impacted by the activities of non-governmental organizations and special interest groups and stakeholder reaction to actual or perceived impacts of new technology on safety, health and the environment. Obtaining and maintaining regulatory approvals requires submitting a significant amount of information and data, which may require participation from technology providers. Regulatory standards and trial procedures are continuously changing. The pace of change together with the lack of regulatory harmony could result in unintended noncompliance. In addition, the company's compliance could be affected by the detection of low level presence of biotechnology traits in conventional seed or products produced from such seed. Furthermore, the detection of biotechnology traits not approved in the country of planting may affect the company's ability to supply product and could affect exports of products produced from such seeds and even result in crop destruction or product recalls. (DuPont, 2014a, p. 11).

In sum, DuPont did not engage in outward defiance. Given the company's strategy of diluting stigma, the fact that they did not use outward defiance tactics makes strategic sense. Using defiance strategies would bring attention to their stigmatized activities and thus prevent the firm from shielding themselves from stigma. The next strategic response discussed is manipulation.

4.2.2.3.2 Manipulation²³⁰

The fourth strategic response discussed is manipulation. Even though DuPont occasionally made statements regarding collaborating with governments, the firm did not make explicit mention of the desire to engage in political lobbying for the purpose of consumer acceptance strategies. Therefore, despite the firm making statements about the importance of working with others, the link was not directly related to tackling stigma, and therefore was not counted as political advocacy. Examples include the following, when the company stated the importance of extending and broadening their relationships with thought leaders.

However, our transformation to become a sustainable growth company is much more fundamental than simply reducing our environmental footprint, as important as that may be. It involves changing the way we create value from one that is driven primarily by material, energy and capital to one where knowledge and service are increasingly important. It also involves the greater use of new and important technologies like biotechnology and nanotechnology to complement our existing strengths in chemistry and materials science. And, we are extending and broadening our relationships with global thought leaders and non-government organizations to both seek guidance and oversight as well as to form partnerships to bring our technology and resources to a greater percentage of the world's people than we do today (DuPont, 2002, p. 2).

²³⁰ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.

Moreover, the company has also made a commitment to work with scientists, students and educators:

Advance education in genetics and plant biology through support of research at public institutions, publication of research in peer-reviewed journals, presentations at scientific conferences, and interactions with educators, students and customers (DuPont, 2004b, p. 32; 2005, p. 33; 2006b, p. 34; 2007, p. 34).

DuPont also makes the following statement about the role of DuPont in society:

But of course, what the government agency does depend on what the companies can supply. And so it is very much a combination of innovation within the companies that guides public policy. That's something that is incredibly important for companies to understand. I hope DuPont will not only do its own work in this field, but will take a leadership role within other entities or with other companies. That's what's really going to make the difference for the nation (DuPont, 2006a, p. 20).

As previously mentioned, the above quotes although implicitly manipulative were not counted as manipulation strategies, as in comparison to the other firms, these statements are general.

Moreover, the company has also made claims about training farmers on agricultural methods, which signals a form of manipulation. For instance, in 2014, the company stated: "AMSAP created 320 demonstration plots and trained more than 4,000 farmers and extension workers in its first year alone. The program is expected to eventually reach 100,000 farmers" (DuPont, 2014b, p. 8).

The company also uses fear tactics as a manipulation strategy. This is done to help make people believe that the company's products are necessary in order to feed the world. For instance, in 2012 DuPont stated: "The challenge of feeding the growing global population is daunting. Food security is so multi-faceted that no one country, let alone one company, has all the answers" (DuPont, 2012, p. 6). Similar statements were made in other years. For instance, in 2010 the firm stated:

To help feed the world's rapidly expanding population, DuPont is investing 60% of our research and development dollars to help the world's growing population produce enough food. From advancing the nutritional content of crops, to helping farmers and growers around the world increase their yields, to finding better ways to ensure food safety, we're working every day to get more good food to more people (DuPont, 2010, p. 5).

Another example is from 2012 when DuPont said:

Global leaders in sustainability are increasingly recognizing the importance of food security and sustainable agriculture. To truly consider the lives and wellbeing of future generations, we must work to ensure there will be enough healthy food for sustained nourishment (DuPont, 2012, p. 6).

To summarize, the most commonly used manipulation tactic was *L: Use of fear tactics (14/16)*. The next strategic response discussed is destigmatization.

4.2.2.3.2.3 Destigmatization²³¹

The fifth and final strategic response discussed is destigmatization. DuPont tried to reframe the industry in terms of sustainable agriculture, however, efforts to do so were inconsistently used. An example is from 2007 when the firm stated:

Promote integrated solutions for sustainable agriculture that safely and appropriately utilize a broad range of available technologies, business capabilities, and IP for both existing farming methods and emerging mechanical and biotechnology application (DuPont, 2007, p. 34).

Another example is from 2014, when the company stated:

Feeding a growing population on a changing planet is a global challenge. At DuPont, we are investing in research and partnerships at new levels to find sustainable solutions. We have set strategic goals focused on food security, and have challenged ourselves to add more value and have a greater impact by integrating them with our sustainability objectives. These efforts are a critical part of our business and we are committing resources to solving this challenge each and every day (DuPont, 2014b, p. 8).

Overall the firm scored moderate on destigmatization, *N: Sustainable Agriculture (7/16)*. The following section provides a summary of the strategic responses used by DuPont in response to stigma.

4.2.2.4 Summary Description and Table

To recap, DuPont engaged in low avoidance strategies, very high dilution, very low defiance, low manipulation and moderate destigmatization tactics. DuPont consistently brought attention to the fact that stigma existed in the industry and therefore engaged in low avoidance. However, DuPont failed to address the specifics of what consumers feared about the technology, and instead went immediately into trying to convince the public of the efficacy of the technology. The firm also didn't engage in stigma escape behaviors. In terms of dilution, the firm made efforts

²³¹ Destigmatization is the second-order theme with six first-order categories: N: Sustainable Agriculture

to disassociate itself from the industry in order to dilute stakeholder expectations and make it so consumers see the DuPont vision as one which tackles global challenges and megatrends. In other words, upon first glance, consumers are not aware of DuPont's activities in agricultural biotechnology. To summarize, DuPont scores very high in dilution. DuPont did not engage in extensive active strategic responses. In terms of defiance, the firm does not engage in defiance tactics and thus received a score of very low. This is consistent with the firms' efforts to dilute stigma. If the company engaged in defiance tactics, the firms' efforts to dilute stigma would be fruitless as this would bring more attention to their stigmatized activities. Moreover, in terms of manipulation of stigma, DuPont engaged in low manipulation for similar reasons. In terms of destigmatization strategies, the firm tried to reframe the industry in terms of sustainable agriculture inconsistently and thus received a score of moderate. See *Table 43: DuPont Strategic Responses to Stigma*, *Table 44: Du Pont Strategic Responses to Stigma Summary Table* and *Table 45: DuPont Supportive Evidence—Illustrative Quotations*.

Table 43: DuPont Strategic Responses to Stigma²³²

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses				Active Strategic Responses									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	–	–	–	X	–	–	–	–	–	–	–	–	–	–
2001	–	–	–	X	–	–	–	–	–	–	–	–	–	–
2002	–	–	X	X	–	–	–	–	–	–	–	X	–	–
2003	–	–	X	X	–	–	–	–	–	–	–	X	–	–
2004	–	–	X	X	–	–	–	X	–	–	–	X	–	X
2005	–	–	X	X	–	–	–	X	–	–	–	X	X	X
2006	–	–	X	X	–	–	–	–	–	–	–	X	–	X
2007	–	–	X	X	–	–	–	–	–	–	–	X	–	X
2008	–	–	X	X	–	–	–	–	–	–	–	X	–	–
2009	–	–	X	X	–	–	–	–	–	–	–	x	–	–
2010	–	–	X	X	–	–	–	–	–	–	–	X	X	–
2011	–	–	X	X	–	–	–	–	–	–	–	X	X	X
2012	–	–	X	X	–	–	–	X	–	–	–	X	–	X
2013	–	–	X	X	–	–	–	X	–	–	–	X	X	X
2014	–	–	X	X	–	–	–	–	–	–	X	X	–	–
2015	–	–	X	X	–	–	–	X	–	–	–	X	X	–
SUM ²³³	0	0	14	16	0	0	0	5	0	0	1	14	5	7
	14/48 = 29%			16/16 = 100%	0/48 = 0%			25/96 = 26%						7/16 = 44%
Usage	Low			Very High	Very Low			Low						Moderate

Source: Own Elaboration

Table 44: DuPont Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)			X		
Low (21–40%)	X			X	
Moderate (41–60%)					X
High (61–80%)					
Very High (81–100%)		X			

 Source: Own Elaboration²³⁴

²³² (X) marks the presence of first-order category, while (–) marks the absence of the first-order category.

²³³ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.

²³⁴ Percentages obtained from Table 42: DuPont Strategic Responses to Stigma. Percentages rounded to the nearest percentage point.

Table 45: DuPont Supportive Evidence—Illustrative Quotations

First-Order Categories	Supportive Evidence
AVOIDANCE	
A ²³⁵ = <i>Avoiding mention of existence of stigma</i>	1. “To a significant degree, results in the company’s Agriculture & Nutrition and Pioneer segments reflect changes in agricultural conditions, including weather and government programs. These results also reflect the seasonality of sales of agricultural products; highest sales in the U.S. occur in the first half of the year. In addition, demand for products produced in these segments may be affected by market acceptance of genetically enhanced products” (DuPont, 2000a, p. 65).
B = <i>Escape Behaviors</i>	NA ²³⁶
C ²³⁷ = <i>Concealment of hostile audiences</i> ²³⁸ <i>viewpoint</i>	2. “We also held a dialogue with environmental, government and business leaders in Mexico with the discussion focused on the cultural, ethical and moral implications of introducing new technology into society” (DuPont, 2000b, p. 3).
STIGMA DILUTION	
D = <i>Expectation Blurring</i>	3. “DuPont is uniquely positioned to address the rising demand for secure, environmentally sustainable and affordable energy sources. With a growing population, we will need to use our existing resources more responsibly and find new and cleaner energy sources. DuPont is applying deep expertise in microbiology, fermentation, polymer science and electrochemistry to help make cars lighter, fuels cleaner, and sustainable energy sources, such as the sun, easier to harness—all contributing to a lower carbon future” (DuPont, 2011, p. 26).
DEFIANCE	
E = <i>Defiance against those who are against GMOs</i>	NA ²³⁹
F =	NA ²⁴⁰

²³⁵ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation.

²³⁶ No findings for DuPont.

²³⁷ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences’ viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences’ viewpoints/concerns is shown as an illustrative quotation.

²³⁸ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuyesen (2009), Tracey and Phillips (2016) and Vergne (2012).

²³⁹ No findings for DuPont.

²⁴⁰ No findings for DuPont.

<i>Critical of legislation and/or regulations about GMOs</i>	
<i>G = Critical of GMO labeling</i>	NA ²⁴¹
MANIPULATION	
<i>H = Providing education/training</i>	4. "We ran a successful pilot in Mexico to identify business projects to meet important needs in the middle and bottom of the economic populations, and plan to extend this process to Asia and South America in 2004. We also agreed to fund a three-year project with A Harvest Foundation in Africa to help lift about 10,000 families out of poverty through training in sustainable farming methods" (DuPont, 2004b, p. 5).
<i>I = Political advocacy/lobbying</i>	NA ²⁴²
<i>J = Explicit intent to change perceptions of consumers</i>	NA ²⁴³
<i>K = Use of anecdotal evidence/storytelling</i>	5. "Just outside of Vanderbijlpark, South Africa, a woman smallholder farmer named Nolundi Msengana Makaula is developing a commercial farm using DuPont Pioneer maize hybrids. Her 450 acres of fields produce 1.5 times more yield per acre than the national average, and she has been lauded as a leader in agribusiness and has won many awards for her successes in farming" (DuPont, 2014b, p. 7).
<i>L = Use of Fear Tactics</i>	6. "Ensuring that enough healthy, nutritious food is available for people everywhere is one of the most critical challenges facing humanity. Our focus on providing for the needs of a growing population will help developing countries prosper, and foster economic growth around the world" (DuPont, 2014b, p. 2).
<i>M = Membership in Agribiotechnology Industry Associations</i>	7. "Additionally, our Pioneer Hi-Bred business is a member of CropLife International, a global federation representing the plant science industry" (DuPont, 2011, p. 52).

²⁴¹ No findings for DuPont.

²⁴² No findings for DuPont.

²⁴³ No findings for DuPont.

DESTIGMATIZATION	
N = <i>Sustainable Agriculture</i>	8. "Promote integrated solutions for sustainable agriculture that safely and appropriately utilize a broad range of available technologies, business capabilities, and IP for both existing farming methods and emerging mechanical and biotechnology application" (DuPont, 2004a, p. 31).

Source: Own Elaboration

4.3 Quadrant 3

4.3.1 CASE STUDY #5: MONSANTO

4.3.1.1 Description of the Firm

The fifth case under investigation is Monsanto. Monsanto is an American multinational agricultural products company. Monsanto was founded in 1901 by John F. Queeny (Ferrell & Fraedrich, 2015). At its founding, the company specialized in commodity food additives, as well as artificial sweeteners, known as saccharine (Lipson & Green, 2017), and supplied Coca-Cola with caffeine and vanillin (Ferrell & Fraedrich, 2015). Monsanto was also known as one of the largest producers of aspirin in the U.S. (Bell, Knoop et al., 2012). The firm has faced much controversy in the past for example for their production of PCBs²⁴⁴, more precisely Aroclor²⁴⁵ 1254 and 1260 (Neslen, Aug 10 2017).

Monsanto's agricultural division was established in 1945 (Bell, Knoop et al., 2012). The firm conducted their first field trial in 1987 after approval from the USDA, and in the late 1980s began focusing on other crops such as corn, soybeans cotton, wheat and potatoes (Bell, Knoop et al., 2012). In the 1980s, the company opened its first biotechnology laboratory. Furthermore, Monsanto was the company which was first able to successfully modify the genetics of a plant cell in 1982 (Lipson & Green, 2017), and in 1996, launched "Roundup Ready" soybeans, which was the first commercial biotechnology seed (Bell, Knoop et al., 2012).

Monsanto currently has over 20,000 employees, with facilities in 169 countries around the world (Monsanto, 2017a). As of May 2017, Monsanto's market value was \$50.9 billion, the company had \$31.4 billion in assets, \$1.9 billion in profits, \$14.5 billion in sales, and was listed 378th on Forbes Global 2000 (Forbes, 2017f). Monsanto is currently listed on the NYSE under ticker symbol MON (Bloomberg, 2017). The firm describes its purpose as the following: "Monsanto is a global modern agriculture company. We develop products and tools to help farmers around the world grow crops while using energy, water, and land more efficiently. We believe innovation has the potential to bring humanity's needs in balance with the resources of our planet" (Monsanto, 2017a).

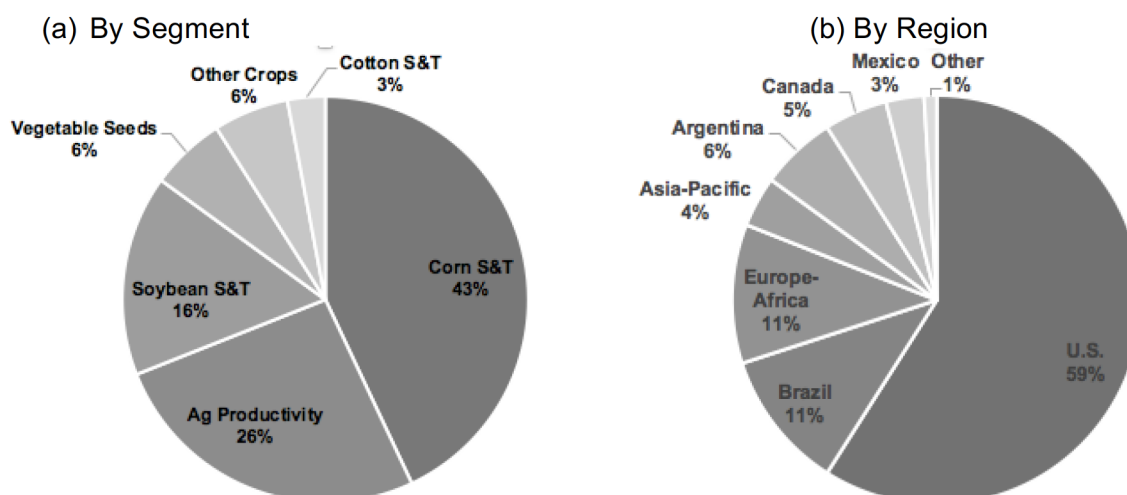
²⁴⁴ PCBs are "man-made organic chemicals consisting of carbon, hydrogen and chlorine atoms" produced in the U.S. between 1929 and 1979, until they were banned (EPA, Aug 10 2017)

²⁴⁵ Aroclor is used as a measure of PCBs, and is described as "the trade name of the commercial PCB mixtures" (Okun, Dec 19 2011)

4.3.1.2 Exposure to Stigma

Monsanto's products are divided into two segments. The first segment, Monsanto's Agricultural Productivity Segment, is where the company manufactures "Roundup" and other herbicides (Goldberg, 2012, p. 2). Through their second division, the company produces seeds and develops biotechnology traits to benefit farmers (Goldberg, 2012, p. 2). In their Seeds segment, the company sells: "DEKALB (corn), Asgrow (soybeans, canola and others), Deltapine (cotton), Seminis (vegetables), and De Ruiter (vegetables) brands and a number of regional brands" (Goldberg, 2012, p. 2). See *Figure 49: Monsanto FY2016 Sales* for a breakdown of the company's sales by segment and region (Bayer, 2017b). The company's segments include: corn s&t, agricultural productivity, soybean s&t, vegetable seeds, cotton s&t and other crops (Bayer, 2017b).

Figure 49: Monsanto FY 2016 Sales



Source: Bayer (2017b, p. 1)

Monsanto views Seeds and Genomics as the key to its future growth (Monsanto, 2015b). Over time, the company has divested away from the herbicide markets to focus more on seeds and traits, as the herbicide market was becoming commodified (Lipson & Green, 2017).

As of 2015, the company's slogan is as follows: "growth for a better world" (Monsanto, 2016). The company describes its role in sustainable agriculture using three principles: producing more, conserving more, and improving lives (Monsanto, 2015a). See *Table 46: Monsanto's Role in Sustainable Agriculture*.

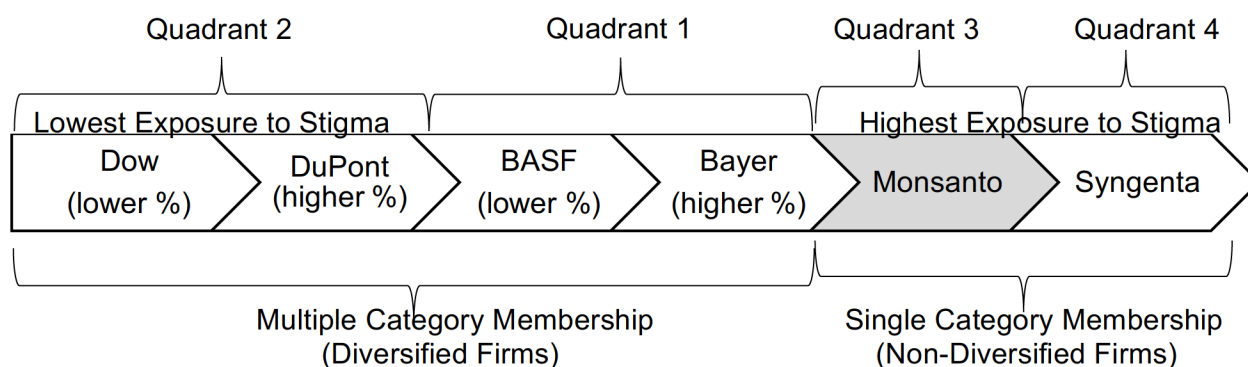
Table 46: Monsanto Role in Sustainable Agriculture

Producing More	Conserving More	Improving Lives
Developing improved seeds that help farmers double yields from 2000 levels for corn, soybeans, cotton and spring-planted canola, with a \$10 million grant pledged to improve wheat and rice yields.	Conserving resources through developing seeds that use one third fewer key resources per unit of output to grow crops while working to lessen habitat loss and improve water quality.	Helping improve the lives of all farmers who use our products, including an additional five million people in resource-poor farm families by 2020.

Source: Monsanto (2017d)

Monsanto has global headquarters located in St. Louis, Missouri (Monsanto, 2017b), U.S. an area of lower stigma, but is a non-diversified firm operating in solely one stigmatized industry. See *Figure 50: Monsanto Exposure to Stigma* to see a comparison of Monsanto's exposure to stigma relative to the other five firms of the Big Six.

Figure 50: Monsanto Exposure to Stigma²⁴⁶

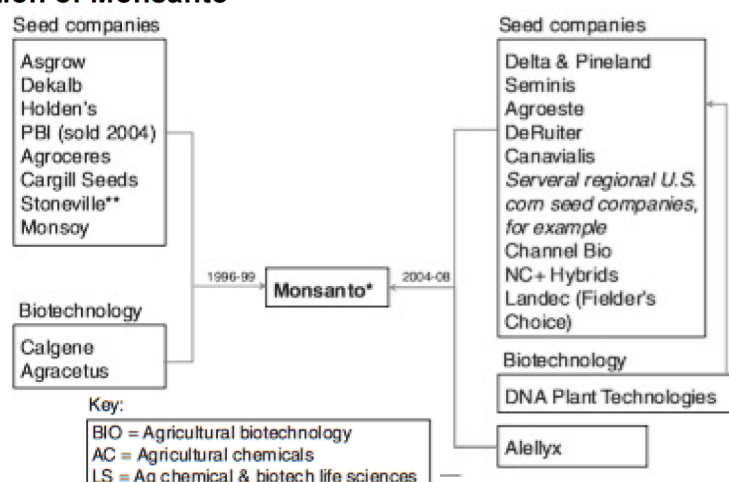


Source: Own Elaboration

The formation of today's Monsanto was due to a number of mergers and acquisitions (Fuglie, Heisey et al., Dec 2011). See *Figure 51: Formation of Monsanto*. In the year 2000, the original Monsanto Company entered into a merger and its name was changed to Pharmacia (Bell, Knoop et al., 2012). Moreover, the previous agricultural division of Pharmacia, was incorporated as a subsidiary until it became its own separate entity in 2002 (Bell, Knoop et al., 2012). The company divested their chemical business in order to focus on crops 2002 (Bell, Knoop et al., 2012). In 2001, Monsanto was the first company to successfully introduce a second-generation biotechnology trait product (Monsanto, 2017c).

²⁴⁶ Monsanto has the 2nd highest exposure to stigma when it comes to the *Big Six firms*. Syngenta has the highest exposure to stigma (1st highest), Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

Figure 51: Formation of Monsanto



Source: Modified from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009).

The formation of Monsanto stems from a variety of firms (Fuglie, Heisey et al., Dec 2011). According to Stucke and Grunes (Jul 22 2016, p. 17): “[...] of Big Six, Monsanto made by far the greatest number of large acquisitions of seed and related companies. Monsanto acquired almost 40 companies, including global seed and agrochemical firms and independent seed companies that had historically held the substantial base of germplasm needed by biotechnology developers to breed new varieties.” In July 2014, Monsanto wanted to purchase Syngenta for U.S. \$46 billion, however, the deal was not approved by shareholders (Stifung, Feb 2017). Monsanto has engaged in a number of acquisitions and agreements²⁴⁷ in the sector over time (Pelaiez & Mizukawa, 2017). See Table 47: *Monsanto—Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets*.

Table 47: Monsanto—Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets

Monsanto							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides	Total	Pesticides	Seeds	Biopesticides	Total
0	51	2	53	25	39	7	71

Source: Modified from Pelaiez and Mizukawa (2017, p. 3)

²⁴⁷ Agreements are described by Pelaiez and Mizukawa (2017, p. 1) as “cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined.”

Now that context has been provided regarding Monsanto's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

4.3.1.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by Monsanto will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for Monsanto. See *Table 48: Monsanto Strategic Responses to Stigma*, *Table 49: Monsanto Strategic Responses to Stigma Summary Table* and *Table 50: Monsanto Supportive Evidence—Illustrative Quotations*.

4.3.1.3.1 Passive Coping Strategies

4.3.1.3.1.1 Avoidance²⁴⁸

The first strategic response discussed is avoidance. Signs of avoidance of stigma was low for Monsanto. During every year, some statement was made about issues surrounding public acceptance. The following example is from 2015:

The degree of public understanding and acceptance or perceived public acceptance of our biotechnology and other agricultural products can affect our sales and results or operations by affecting planting approvals, regulatory requirements and customer purchase decisions. Although all of our products go through rigorous testing, some opponents of our technology actively raise public concern about the potential for adverse effects of our products on human or animal health, other plants and the environment. The potential for low-level or adventitious presence of commercial biotechnology traits in conventional seed, or in the grain or products produced from conventional or organic crops, is another factor that can affect general public acceptance of these traits. Public concern can affect the timing of, and whether we are able to obtain, government approvals for our products. Even after approvals are granted, public concern may lead to increased regulation or legislation or litigation against government regulators concerning prior regulatory approvals, which could affect our sales and results of operations including by affecting planting approvals, and which may adversely affect sales of our products to farmers, including due to their concerns about available markets for the sale of crops or other products including those derived from biotechnology. In addition opponents of agricultural biotechnology have attacked farmers' fields and facilities used by agricultural biotechnology companies and may launch future attacks against farmers' fields and our

²⁴⁸ Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

field testing sites and research, production, or other facilities, which could affect our sales and our costs (Monsanto, 2015b, p. 9).

The reason why Monsanto is not able to avoid stigma is because they solely operate in a stigmatized industry, therefore, they have higher exposure to stigma. The company also states:

The viability of our product pipeline depends in part on the speed of regulatory approvals globally, continued patent and legal rights to offer our products, general public acceptance of the products and the value they will deliver to the market (Monsanto, 2015b, p. 17).

Furthermore, in 2003, the company states:

Over the years, Monsanto has engaged in stigma escape behaviors. For instance, in 2003, the company stated: "Given the uncertainty of the regulatory environment, we're focusing on factors that we can control. We're prioritizing our efforts to gain approvals for biotechnology crops and advancing penetration of products in markets where they are approved. For example, as U.S. farmers continue to use effective systems to sell grain into markets not affected by European Union (EU) import restrictions, we see the potential for significant growth in Roundup Ready and YieldGard Rootworm acres, even without EU approval" (Monsanto, 2003a, p. 10).

To summarize, Monsanto does not avoid stigma and has occasionally engaged in escape behaviors. The only used avoidance strategy for Monsanto was *B: Escape Behaviors (1/16)*. The next strategic response discussed is dilution.

4.3.1.3.1.2 Dilution²⁴⁹

The second strategic response discussed is dilution. Stigma dilution was not a strategy that was used by Monsanto. This is primarily because Monsanto does not have the ability to dilute stigma. When Monsanto describes its activities, shielding themselves from controversy by downplaying their role in agricultural biotechnology is not possible. The company is therefore very specific when it comes to their involvement in agriculture. For instance, in 2015, the company stated:

Through programs and partnerships, we collaborate with others to help tackle some of the world's biggest challenges. We are a diverse collection of food enthusiasts, moms and dads, innovators, botanists, farmers and thinkers all striving for the same thing: helping to make balanced meals—of fruits, vegetables and protein—more accessible to all and doing it in a way that helps protect the environment so that everyone wins (Monsanto, 2015c, p. 9).

²⁴⁹ Dilution is the second-order theme with only one first-order category: D: Expectation Blurring.

To summarize dilution was not something that Monsanto was able to do in response to stigma. Stigma dilution, *D: Expectation Blurring (1/16)* was found once, for the reporting period of 1999-2000 before the company became a non-diversified firm specializing in solely agriculture:

Monsanto is a life sciences company addressing the food and health needs of a rapidly expanding world population while recognizing the importance of environmental sustainability. Through innovative technology and breakthrough products that link the fields of agriculture, nutrition and medicine, we are dedicated to helping people everywhere live longer, healthier life (Monsanto, 1999-2000, p. 19).

The next strategic responses discussed are the active strategic responses to stigma. These include defiance, manipulation and destigmatization.

4.3.1.3.2 Active Coping Strategies

4.3.1.3.2.1 Defiance²⁵⁰

The third strategic response discussed is defiance. Monsanto has exhibited a lot of defiance to stigma. Firstly, on a couple of occasions the company denied the fact that consumer acceptance issues exist:

Beyond these commercial benefits, we continue to see broad global acceptance and recognition of technology's role in meeting our world's growing needs. We're pleased to see the value this technology is bringing to 14 million farmers globally, 90 percent of whom are resource-poor farmers in developing countries (Monsanto, 2010a, p. 5).

And made exaggerated statements about the improvement of stigma:

We're also seeing the beginning of a turnaround in consumer acceptance of biotechnology in Europe, and a further strengthening of the positive attitude toward biotechnology in the U.S. and other parts of the world. An informed consumer is a positive consumer. In the New Monsanto Pledge, we committed to open dialogue, transparency, and respect. This attitude led to a more open and balanced dialogue with our customers, food companies, environmentalists, and members of nongovernmental organizations (Monsanto, 2001, p. 7).

However, these two cases were marked as defiance strategies as Monsanto was the only company to claim that acceptance has increased. It was not marked under avoidance of stigma, because the issue of stigma was still mentioned. The company has also illustrated very defensive behavior when it comes to safety concerns of stakeholders:

²⁵⁰ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

The safety of our products is our first priority, and multiple health societies, hundreds of independent scientific experts and dozens of governments around the world have determined that foods and ingredients developed through biotechnology (or genetic modification [GM]) are safe (Monsanto, 2015c, p. 88).

Moreover, in regards to food labeling, the company has made comments that can be described as defensive:

We support a federal approach to food labeling. A uniform, national standard is needed to provide consumers accurate and consistent information about their food, without implying that ingredients derived from GM crops are less nutritious or less safe. This approach would eliminate confusion and address the uncertainty that would be created by a patchwork of state-by-state GMO food labeling law (Monsanto, 2015c, p. 89).

Furthermore, in 2011, the company states:

As I absorb and think about all of this, I believe the most important outcome is that both farmers and consumers have informed choices, without the effect of unhelpful fear mongering. The current system of voluntary labeling accomplishes these objectives, and everyone can find what they want. The competitive marketplace is alive and well. If more and more consumers truly want organic and other non-GM products, we will have more food companies offering more products to serve those needs (Monsanto, 2011, p. 73).

Monsanto has also claimed that the public is not well educated about science, which is the reason for their scepticism regarding the technology:

Both the agriculture industry and regulatory bodies could be more effective at helping consumers understand the way regulators do their assessments. There's a significant gap in people's knowledge about science, safety and the benefits of all the agriculture technologies that are used, whether it's chemistry or biotech (Monsanto, 2015c, p. 88).

Monsanto has also stated that regulatory systems are not appropriately funded, and take too long to approve products, which dampens innovation:

From a business perspective, it's also crucial that regulatory systems are funded appropriately so they can conduct their thorough assessments in a timely fashion. In Monsanto's case, our product introduction cycles are seasonal. We get an opportunity to introduce a new innovation to farmers only once a year. Timing is critical. If we receive required approvals late, farmers may have to wait another whole year to get the opportunity to leverage that innovation (Monsanto, 2015c, p. 88).

Moreover, the company has stated that customers who face problems with their products, face these issues because they don't follow consumer purchase agreements, and that the lawsuits against the company are unjust:

Many businesses, including Monsanto, have formal agreements with customers to ensure the best possible outcome for everyone. When farmers choose to purchase patented seeds we produce, they agree by contract not to save seeds from the crop produced at the end of the season. Almost all of our customers stick to their agreements, and they want us to make sure others are doing the same—otherwise, it's not a level playing field for them. Unfortunately, a very small number of our customers don't abide by their agreements. For instance, they might save seeds from crops grown from the seeds they purchase from us. Not only does this violate their customer agreement, but these second-generation seeds are less effective because they may not offer the same benefits as the first generation (Monsanto, 2015c, p. 87).

The company has also made statements about their disagreement with researchers who have shown that some of their products may be unsafe:

In March 2015, the International Agency for Research on Cancer (IARC) evaluated the potential carcinogenicity of several pesticides, including glyphosate, an active ingredient in many popular herbicides, including Monsanto's Roundup® family of herbicides. After the one-week review, the IARC panel classified glyphosate as a Category 2A hazard ("probably carcinogenic to humans"), a category in which IARC recently included red meat. Based on the overwhelming weight of evidence, key regulatory agencies, as well as Monsanto, disagreed with IARC's classification of glyphosate. Importantly, IARC overlooked decades of thorough and science-based analysis by regulatory agencies around the world and selectively interpreted data to arrive at its classification of glyphosate. No regulatory agency in the world considers glyphosate to be a carcinogen (Monsanto, 2015c, p. 87).

Moreover, in 2014 the company states:

A key ingredient in our Roundup branded crop protection products is glyphosate, one of the most studied and widely used herbicide ingredients in the world. Farmers who grow certain biotech crops have been able to switch to Roundup branded crop protection products which have an excellent safety profile and have enabled farmers to have better harvests with less environmental impact. Scientists from around the globe have conducted safety studies on glyphosate and published their findings in peer-reviewed journals. The overwhelming scientific consensus is that when used properly, glyphosate poses no unreasonable adverse effects to people, animals, soil, water and plants. Therefore, we need to continue to educate our direct and indirect customers (Monsanto, 2014a, p. 7).

The company has also made contradictory statements about their opinions on food labeling. On the one hand, they state that consumers should be able to freely choose what products to consume, but on the other hand, they oppose labeling of products that have shown to be safe, which according to the company, is all of their products:

Each country establishes its own food labeling laws. Within the U.S., the federal government has established clear guidance with respect to labeling food products containing biotech ingredients. We support this approach. We also support food companies' choices to voluntarily label food products noting certain attributes based on their customers' preferences, provided the labeling is truthful and not misleading. We

oppose current initiatives to mandate labeling of ingredients developed from biotech seeds in the absence of any demonstrated risks. Such mandatory labeling could imply that food products containing these ingredients are somehow inferior to their conventional or organic counterparts (Monsanto, 2014b, p. 37).

The company also makes very defensive statements about people who do not accept GM technology by saying that such claims do not have scientific basis. For instance, in 2000 the company states:

The commercial success of agricultural and food products developed through biotechnology will depend in part on government and public acceptance of their cultivation, distribution and consumption. We continue to work with consumers, customers and regulatory bodies to encourage understanding of agricultural biotechnology products. Biotechnology has enjoyed and continues to enjoy substantial support from the scientific community, regulatory agencies and many governmental officials around the world. However, public attitudes may be influenced by claims that genetically modified plant products are unsafe for consumption or pose unknown risks to the environment or to traditional social or economic practices, even if such claims have little or no scientific basis. Securing governmental approvals for, and consumer confidence in, such products poses numerous challenges, particularly outside the U.S. Some countries also have labeling requirements. In some markets, because these crops are not yet approved for import, growers in other countries may be restricted from introducing or selling their grain (Monsanto, 2000a, p. 33).

Moreover, in 2012 the company states:

Monsanto supports food companies' choices to voluntarily label food products based on their customers' preferences [e.g., organic or non-Genetically Modified (GM)], provided the label is truthful and not misleading. Food companies are in the best position to determine what type of information meets the needs and desires of their customers (Monsanto, 2012, p. 84).

To summarize, the most commonly used defiance strategy for Monsanto was *E: Defiance against those who are against GMOs (13/13)* and *F: Critical of legislation and/or regulations about GMOs (13/13)*. The next strategic response discussed is manipulation.

4.3.1.3.2.2 Manipulation²⁵¹

The fourth strategic response discussed is manipulation. Manipulation included statements made about being politically active, and involved with governments in order to create or change policy regarding global seed and agrochemical or chemical legislation. An example of

²⁵¹ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.

a manipulation strategy is from 2000, when Monsanto laid out a biotechnology acceptance strategy in hopes of changing the minds of consumers. For instance, in 2000 the company stated:

We have 14,700 people committed to delivering value for our customers and shareowners, and dedicated to delivering on our promises consistently. In order to realize this opportunity and to deal with the challenges we are facing—such as the patent expiration of Roundup herbicide in the U.S. and the slower-than-desired public acceptance of biotechnology—we have laid out a three-step strategy (Monsanto, 2000a, p. 4).

In the same year, the firm also stated:

Monsanto has committed to develop technology that directly contributes to a vision of abundant food and a healthy environment. Through the use of a number of our technologies and products as well as by helping to educate about certain agricultural practices that encourage sequestration, we believe we can contribute to a solution to the climate change challenge (Monsanto, 2000-2001, p. 22).

Moreover, the company admitted to deliberately attempting to manipulate public acceptance:

We must work hard to earn public acceptance of biotechnology. A better climate for our products will set the stage for dramatic growth in the medium term. Specifically, we need to: (1) work with the Brazilian government and other stakeholders to obtain approval to plant Roundup Ready soybeans in Brazil; (2) accelerate the commercialization of Roundup Ready corn by obtaining a license to import grain grown from Roundup Ready seeds into Europe; and (3) continue to expand our markets in Asia with the approval of Bollgard insect-protected cotton in India. The opportunity for rapid growth is great, but we must earn public trust and confidence in order to harvest the fruits of our technology (Monsanto, 2000a, p. 5).

Over time, Monsanto has also admitted to manipulating consumer perception via education programs: For instance, in 2000–2001, the company stated:

We support our products in all global markets with a sales and product development organization that educates growers about our newest products, innovative farming practices and the integration of new products with existing ones. We also use marketing programs to promote our products (Monsanto, 2000-2001, p. 22).

Monsanto also collaborates with educators to get them on their side, as illustrated by Monsanto's 2000–2001 report:

As biotechnology products have been introduced into food chains throughout the U.S. and the world, getting to a working definition of what transparency actually means has been difficult. All too often, things that are important to consumers, researchers, and public interest groups are bypassed. When that happens, rightly or wrongly, people become suspicious and public confidence is eroded. As an associate professor at Purdue University, I am charged with delivering science-based information on food biotechnology to health-care professionals and teachers who communicate with consumers. Some of the most common questions that I encounter during a presentation relate to whether these

products have proper regulatory oversight and whether the scientific information used in the oversight process is available for scientific scrutiny (Monsanto, 2000-2001, p. 7).

Monsanto has claimed on many occasions that it believes in being politically active in order to serve their interests. For example, in 2012, the company said: “As a company committed to bringing new, valuable technologies to farmers and creating value for shareowners, we are engaged in the political process on matters important to our business” (Monsanto, 2012, p. 45). Similarly, in 2015, Monsanto stated: “Participating constructively and transparently in the political process is essential to our company’s long-term success. We contribute to U.S. political candidates and industry and trade groups in a manner compliant with all applicable laws and reporting requirements” (Monsanto, 2015c, p. 81). Monsanto was very consistent with their assertion of their role in politics. Additionally, in 2012, the firm stated: “We believe that participating constructively in the political process is essential to our company’s long-term success, and we contribute to U.S. political candidates in a manner that is compliant with all applicable laws and reporting requirements” (Monsanto, 2014b, p. 136).

Monsanto has also admitted to bringing stakeholders into their facilities, including politicians, which is a method of manipulation:

The center has the ability to reach a diverse group of people to demonstrate how our technologies can help farmers produce more while conserving more. In 2010, nearly 5,000 people visited the center—including farmers, dealers, retailers, crop consultants, company executives, members of non-governmental agencies, politicians, university personnel and journalist (Monsanto, 2011, p. 20).

Moreover in 2003, the company openly admitted to having a European Commercial Acceptance team, whereby they try to influence consumer perception:

In 2003, Monsanto sent out a European Commercial Acceptance team to begin an open dialogue with members of the ELO. They regularly updated the organization with current information on how biotech crops can play an important role in increasing the economic and environmental sustainability of agriculture. They also encouraged the leaders of the ELO to start an internal debate on this matter (Monsanto, 2005b, p. 41).

Another example is from 2005:

We are working toward developing products to generate long-term growth. We believe that our strategic head start in first- and second-generation input traits will give us a leadership position in developing output traits that provide consumer benefits and create value for the food industry. We are working to achieve greater acceptance and to secure additional approvals for our existing biotechnology products globally, and toward the development and timely commercialization of additional products in our pipeline. We are prioritizing our efforts to gain approvals for biotechnology crops, and while we continue to

gain new approvals in global markets, we are pursuing strategies for growth even with delays in some global regulatory approvals (Monsanto, 2005a, p. 55).

Monsanto also uses anecdotal evidence/storytelling to convince stakeholders of the advantages of their products. The following example is from 2002:

Mike Grigg has seen positive results from Monsanto biotechnology traits. He uses Roundup for weed control. Mr. Grigg's crop, seen here just before harvest, is a stacked-trait cotton with Roundup Ready herbicide tolerance and Bollgard insect protection. In 2002, he used Roundup once to burn down weeds and twice during the growing season. He's looking forward to the new Roundup Ready Flex cotton, currently in development, that will allow farmers to spray Roundup over their crops during more of the growing season (Monsanto, 2002, p. 12).

Another example of the use of anecdotal evidence/storytelling is from 2010:

Since I began farming 20 years ago, I have seen cotton yields double and increase in quality. I can clearly see the impact sustainable farming practices and improved technology have had on our farming operation. We have been growing production seed cotton for several years and are continually amazed to see the potential in new products. I believe farmers are true environmentalists. When people really understand what farmers do to make production agriculture work, they can't help but conclude that protecting our environment and conserving our natural resources are at the heart of everything we do. On our farm, we use several different types of technologies. Before biotechnology, we used many more pesticides. I love to bring people to our fields and show them the life that is out there, and explain the difference between farming now and a few years ago. I believe we're living in the most exciting and challenging time in history. As we as farmers commit to learning more about the crops we grow and the soil we grow them in, we improve our planet, our lives, the lives of our families and people around the world (Monsanto, 2010b, p. 5).

In addition to the above mention tactics, Monsanto also engages in the use of fear tactics in order to manipulate stigma. An example is from 2007, when the company aims to instill fear:

Farmers need to produce more food than ever before. Each year, global population grows by more than 73 million.²³ This is only slightly less than adding a population the size of Germany's each year. As a result, world population is expected to reach 7 billion by 2013 and 8 billion by 2028. And, as people in developing countries attain higher levels of education and income, the demand for higher-quality food increases. The combined effect of population gains and income gains around the world is projected to increase the demand for food 55 percent by 2030 (Monsanto, 2007, p. 31).

To summarize, Monsanto uses high manipulation techniques on an ongoing basis in order to manipulate stigma. The most commonly used manipulation strategy used by Monsanto was I: Political advocacy/lobbying (16/16), K: Use of anecdotal evidence/storytelling (16/16) and L: Use of fear tactics (16/16). The next response discussed is destigmatization.

4.3.1.3.2.3 Destigmatization²⁵²

The fifth and final strategic response discussed is destigmatization. Monsanto uses extensive destigmatization techniques. The company reframes the industry in terms of sustainable agriculture on an ongoing and consistent basis over the years. For instance, in 2008–2009, the company stated:

Monsanto is the world's leading company focused on sustainable agriculture. We discover and deliver innovative products that support the farmers who feed, fuel and clothe our growing world. Farmers around the world use our products to address the challenges they face and to reduce agriculture's impact on our environment (Monsanto, 2008-2009).

To summarize, Monsanto engaged in destigmatization every year from 2000 to 2015, obtaining a score of 16 for *N: Sustainable Agriculture* (16/16). The following section provides a summary of the strategic responses used by Monsanto in response to stigma.

4.3.1.4 Summary Description and Table

To recap, Monsanto engaged in very low avoidance strategies, very low dilution, high defiance, high manipulation and very high destigmatization tactics. Monsanto uses very little passive strategic responses to deal with stigma. Specifically, the firm scored very low on both avoidance and dilution strategies. The company instead uses extensive active strategic responses to respond to stigma. The firm used a wide range of defiance (high), manipulation (high) and destigmatization (very high) tactics on a constant basis and very openly admit to using these tactics. See *Table 48: Monsanto Strategic Responses to Stigma*, *Table 49: Monsanto Strategic Responses to Stigma Summary Table* and *Table 50: Monsanto Supportive Evidence—Illustrative Quotations*.

²⁵² Destigmatization is the second-order theme with six first-order categories: *N: Sustainable Agriculture*

Table 48: Monsanto Strategic Responses to Stigma²⁵³

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses			Active Strategic Responses										
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	–	–	–	X	X	X	–	X	X	X	X	X	–	X
2001	–	–	–	–	X	X	–	X	X	–	X	X	X	X
2002	–	–	–	–	X	X	–	X	X	–	X	X	X	X
2003	–	X	–	–	–	–	–	X	X	X	X	X	–	X
2004	–	–	–	–	–	–	–	–	X	X	X	X	–	X
2005	–	–	–	–	–	–	–	X	X	X	X	X	–	X
2006	–	–	–	–	X	X	–	–	X	–	X	X	X	X
2007	–	–	–	–	X	X	–	X	X	–	X	X	–	X
2008	–	–	–	–	X	X	–	X	X	X	X	X	X	X
2009	–	–	–	–	X	X	–	–	X	X	X	X	–	X
2010	–	–	–	–	X	X	–	X	X	–	X	X	X	X
2011	–	–	–	–	X	X	–	X	X	–	X	X	X	X
2012	–	–	–	–	X	X	X	X	X	–	X	X	X	X
2013	–	–	–	–	X	X	–	X	X	–	X	X	–	X
2014	–	–	–	–	X	X	X	X	X	–	X	X	X	X
2015	–	–	–	–	X	X	X	X	X	–	X	X	X	X
SUM²⁵⁴	0	1	0	1	13	13	3	13	16	6	16	16	9	16
	1/48 = 2%			1/16 = 6%	29/48 = 61%			76/96 = 79%						16/16 = 100%
Usage	Very Low			Very Low	High			High						Very High

Source: Own Elaboration

Table 49: Monsanto Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)	X	X			
Low (21–40%)					
Moderate (41 - 60%)					
High (61–80%)			X	X	
Very High (81 - 100%)					X

Source: Own Elaboration²⁵⁵

²⁵³ (X) marks the presence of first-order category, while (–) marks the absence of the first-order category

²⁵⁴ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.

²⁵⁵ Percentages obtained from Table 47: Monsanto Strategic Responses to Stigma.

Table 50: Monsanto Supportive Evidence—Illustrative Quotations

First-Order Categories		Illustrative Quotations
AVOIDANCE		
A²⁵⁶ = Avoiding mention of existence of stigma	1. “The commercial success of agricultural and food products developed through biotechnology will depend in part on government and public acceptance of their cultivation, distribution and consumption. We continue to work with consumers, customers and regulatory bodies to encourage understanding of agricultural biotechnology products. Biotechnology has enjoyed and continues to enjoy substantial support from the scientific community, regulatory agencies and many governmental officials around the world. However, public attitudes may be influenced by claims that genetically modified plant products are unsafe for consumption or pose unknown risks to the environment or to traditional social or economic practices, even if such claims have little or no scientific basis. Securing governmental approvals for, and consumer confidence in, such products poses numerous challenges, particularly outside the U.S..” (Monsanto, 2000b, p. 2).	
B = Escape Behaviors	2. “Given the uncertainty of the regulatory environment, we’re focusing on factors that we can control. We’re prioritizing our efforts to gain approvals for biotechnology crops and advancing penetration of products in markets where they are approved. For example, as U.S. farmers continue to use effective systems to sell grain into markets not affected by European Union (EU) import restrictions, we see the potential for significant growth in Roundup Ready and YieldGard Rootworm acres, even without EU approval” (Monsanto, 2003a, p. 10).	
C²⁵⁷ = Concealment of hostile audiences²⁵⁸ viewpoint	3. “Some opponents of the technology publicly express concern about potential effects of our biotechnology traits on other plants and on the environment, and about potential effects of crops containing these traits on animals and human health” (Monsanto, 2003b, p. 39).	
STIGMA DILUTION		
D = Expectation Blurring	4. “Monsanto is a life sciences company addressing the food and health needs of a rapidly expanding world population while recognizing the importance of environmental sustainability. Through innovative technology and breakthrough products that link the fields of agriculture,	

²⁵⁶ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation

²⁵⁷ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences’ viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences’ viewpoints/concerns is shown as an illustrative quotation.

²⁵⁸ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuyesen (2009), Tracey and Phillips (2016) and Vergne (2012).

	nutrition and medicine, we are dedicated to helping people everywhere live longer, healthier life” (Monsanto, 1999-2000, p. 19).
DEFIANCE	
E = <i>Defiance against those who are against GMOs</i>	5. “Biotechnology has enjoyed and continues to enjoy substantial support from the scientific community, regulatory agencies and many governmental officials around the world. However, public attitudes may be influenced by claims that genetically modified plant products are unsafe for consumption or pose unknown risks to the environment or to traditional social or economic practices, even if such claims have little or no scientific basis” (Monsanto, 2000b, p. 2).
F = <i>Critical of legislation and/or regulations about GMOs</i>	6. “Both the agriculture industry and regulatory bodies could be more effective at helping consumers understand the way regulators do their assessments. There’s a significant gap in people’s knowledge about science, safety and the benefits of all the agriculture technologies that are used, whether it’s chemistry or biotech. From a business perspective, it’s also crucial that regulatory systems are funded appropriately so they can conduct their thorough assessments in a timely fashion. In Monsanto’s case, our product introduction cycles are seasonal. We get an opportunity to introduce a new innovation to farmers only once a year. Timing is critical. If we receive required approvals late, farmers may have to wait another whole year to get the opportunity to leverage that innovation” (Monsanto, 2015c, p. 88).
G = <i>Critical of GMO labeling</i>	7. “There are, however, preferences consumers may have about products that are not based on scientifically documented nutritional differences or health or safety concerns. Food manufacturers’ voluntary labeling practices can address those preferences and provide consumers the opportunity to make those choices. Food manufacturers who believe their customers want particular information can label their products with specific production information as long as it is truthful and not misleading” (Monsanto, 2011, p. 73).
MANIPULATION	
H = <i>Providing education/training</i>	8. “Monsanto representatives also communicate directly with farmers, providing field training and organizing farm tours for small holders interested in conservation tillage practices and yield improvements” (Monsanto, 2000-2001, p. 18).
I = <i>Political advocacy/lobbying</i>	9. “Participating constructively and transparently in the political process is essential to our company’s long-term success” (Monsanto, 2015a, p. 81).
J = <i>Explicit intent to change perceptions of consumers</i>	10. “In the near term, we will focus on three priorities: maximize our existing business; manage costs and cash by optimizing operations; carry out our biotechnology acceptance strategy” (Monsanto, 2000a, p. 4).

K = <i>Use of anecdotal evidence/storytelling</i>	11. "John Howard grows corn and soybeans in northeastern Kansas. He is focused on producing food efficiently, and in ways that preserve the land for future generations. Monsanto is focused on continuing to earn Mr. Howard's business by providing him and other farmers around the world with solutions that match their needs" (Monsanto, 2000a, p. 2).
L = <i>Use of Fear Tactics</i>	12. "Farmers face a complex dilemma: They must meet a growing world appetite for food, fiber and energy while conserving the vital natural resources so essential to their success. Agriculture uses two thirds of the world's fresh water withdrawals, ¹⁵ and concerns about the potential impact of climate change on the food supply are on the rise" (Monsanto, 2008-2009, p. 14).
M = <i>Membership in Agribiotechnology Industry Associations</i>	13. "In operation for four years, Monsanto's Biotech Advisory Council has as its mission 'to improve how Monsanto serves its employees, shareholders, customers, and society by engaging in intensive dialogue among council members, Monsanto management, and outside stakeholders on important issues related to company policies and the commercialization of agricultural products and technologies'" (Monsanto, 2005b, p. 45).
DESTIGMATIZATION	
N = <i>Sustainable Agriculture</i>	14. "At Monsanto, our people have a long-standing commitment to sustainability that's focused on helping the world's farmers—our customers—produce more, conserve more and improve lives. Our approach to sustainable agriculture has been well informed by our active engagement with the science community, agriculture value chain and our farmer customers. But we recognize our work doesn't just impact farmers" (Monsanto, 2013, p. 1).

Source: Own Elaboration

4.4 Quadrant 4

4.4.1 CASE STUDY #6: SYNGENTA

4.4.1.1 Description of the Firm

The sixth case under investigation is Syngenta. Syngenta is a multinational agricultural chemical and seed company headquartered in Basel, Switzerland (Syngenta, 2017f). The roots of the word Syngenta come from Greek and Latin: “Syn” stems from Greek, and it means “synergy and synthesis, integration, and consolidating strengths” (Syngenta, 2017h). Moreover, “Genta” involves humanity and individuals, and “gens,” is Latin and it means “people or community” (Syngenta, 2017h). Therefore, Syngenta means “bringing people together” (Syngenta, 2017h).

As of 2015, Syngenta is present in 90 countries, has 112 production and supply sites, 119 research and development sites and 28,704 employees (Syngenta, 2015b). In 2015, the company invested \$1.36 billion into research and development and reported sales of \$13.4 billion (Syngenta, 2015b). Syngenta is traded on the Swiss Exchange in Zurich, Switzerland. Syngenta also runs a Level III ADS program²⁵⁹ on the New York Stock Exchange. As of 2015, Syngenta was the 33rd largest chemical company in the world (Tullo, Jul 27 2015). As of May 2017, Syngenta’s market capitalization was \$40.9 billion, with \$19.5 billion in assets, \$1.2 billion in profits, \$12.8 billion in sales, and was ranked #489 on Forbes Global 2000 (Forbes, 2017g).

Syngenta describes its strategic goals in the following way: drive productivity through innovation, capitalize on seeds investment, expand in emerging markets, create new businesses and outperform the industry (Syngenta, 2017e). *See Figure 52: Syngenta’s Strategic Goals.* Syngenta describes its corporate purpose as:

We bring plant potential to life: Our aim is to help feed a growing population by bringing plant potential to life. By 2050, the world’s farmers and growers will need to feed around two billion more people. And they’ll need to do so as the land available for agriculture diminishes. It’s a serious challenge and global food security hinges on it. Our research and development, the products we bring to market, and the knowledge and expertise we

²⁵⁹ “An ADR is a negotiable certificate that evidences an ownership interest in American Depositary Shares (“ADSs”) which, in turn, represent an interest in the shares of a non-U.S. company that have been deposited with a U.S. bank. Level 3 ADR programs may be used not only to establish a trading presence, but also to raise capital for the foreign issuer. A registration statement on Form F-1, Form F-3, or Form F-4 would be led in order to offer the ADRs. The non-U.S. company would be required to also le annual reports on Form 20-F” (SEC, Aug 2012)

provide to growers are helping to release the full potential of crops all over the world (Syngenta, 2017c).

Figure 52: Syngenta Strategic Goals

Drive land productivity through innovation	Capitalize on Seeds Investment	Expand in Emerging Markets	Create New Businesses	Outperform the Industry
--	--------------------------------	----------------------------	-----------------------	-------------------------

Source: Information from Syngenta (2017e)

Syngenta's Good Growth Plan describes the firms' mission. These are the following: "make crops more efficient," "rescue more farmland," "help biodiversity flourish," "empower smallholders," "help people stay safe" and "look after every worker" (Syngenta, 2017a). See *Figure 53: The Good Growth Plan*.

Figure 53: The Good Growth Plan

<p>Make Crops more Efficient</p> <ul style="list-style-type: none"> •Increase the average productivity of the world's major crops by 20% without using more land, water, or inputs. 	<p>Rescue more Farmland</p> <ul style="list-style-type: none"> •Improve the fertility of 10 million hectares of farmland on the brink of degradation 	<p>Help Biodiversity Flourish</p> <ul style="list-style-type: none"> •Enhance Biodiversity on 5 million hectares of land.
<p>Empower Smallholders</p> <ul style="list-style-type: none"> •Reach 20 million smallholders and enable farm to increase productivity 	<p>Help People Stay Safe</p> <ul style="list-style-type: none"> •Train 20 million farm workers on labor safety, especially in developing countries. 	<p>Look After Every Worker</p> <ul style="list-style-type: none"> •Strive for fair labor conditions throughout our entire supply chain network.

Source: Information from Syngenta (2017a)

4.4.1.2 Exposure to Stigma

Syngenta's business is divided into two segments: Crop Protection and Seeds. Syngenta's products include herbicides (both selective and non-selective), fungicides, insecticides, and seed treatments (Syngenta, 2015b). Syngenta's products include herbicides (both selective and non-selective), fungicides, insecticides, and seed treatments (Reinhardt & Shelman, Jan 5 2015). Syngenta's products include: herbicides, insecticides, fungicides, seed care, seeds and traits as well as crops and other adjacent technologies (Syngenta, 2017a). See *Figure 54: Syngenta Products*.

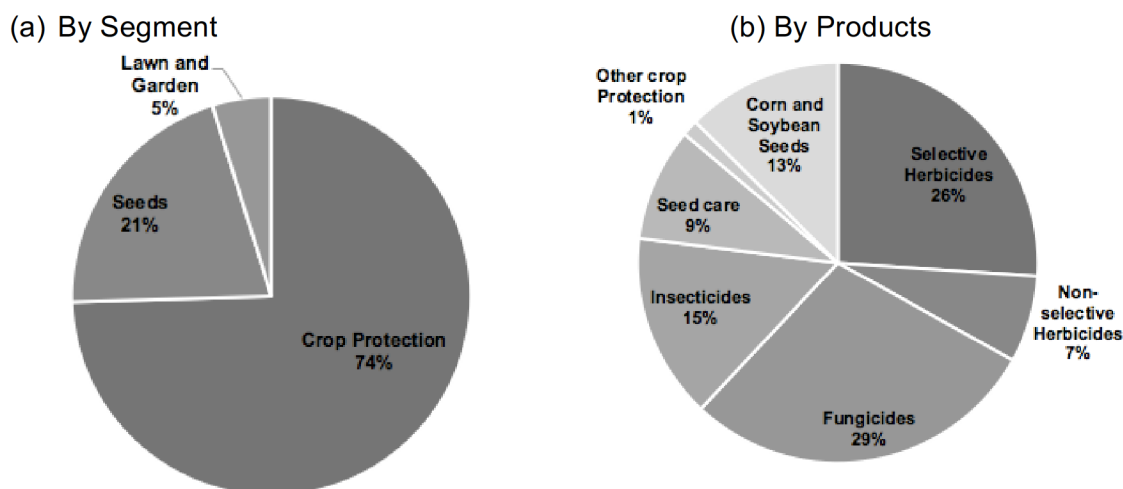
Figure 54: Syngenta Products

Products	Crops	Adjacent Technologies
<ul style="list-style-type: none"> •Herbicides •Insecticides •Fungicides •Seedcare •Seeds •Traits 	<ul style="list-style-type: none"> •Cereals •Corn •Diverse field crops •Rice •Soybean •Specialty Crops •Sugar cane •Vegetables •Lawn and Garden 	<ul style="list-style-type: none"> •Nutrients •Financial Solutions •Information Systems •Digital Agronomy

Source: Information from Syngenta (2017a)

The figure below shows the percentage of sales in 2016 by segment and by product. See Figure 55: Syngenta Percentage of Sales 2016.

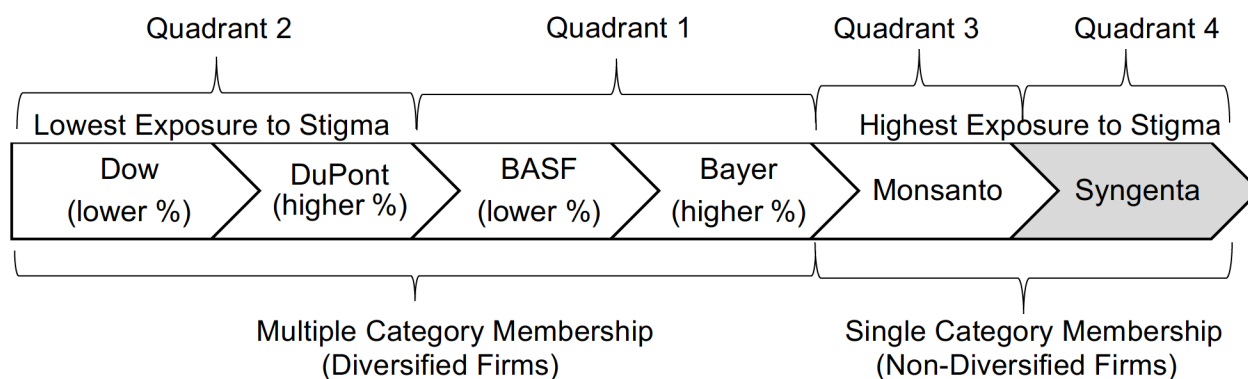
Figure 55: Syngenta Percentage of Sales 2016



Source: Syngenta (2016, p. 47)

Syngenta has global headquarters located in Europe. An area of higher stigma, but is a non-diversified firm operating in solely one stigmatized industry. See Figure 56: Syngenta Exposure to Stigma to see a comparison of Monsanto's exposure to stigma relative to the other five firms of the Big Six.

Figure 56: Syngenta Exposure to Stigma²⁶⁰



Source: Own Elaboration

Syngenta was formed in 2000 by a merger between Novartis Agribusiness and Zeneca Agrochemicals (Syngenta, 2017h). Syngenta was first listed on November 13, 2000, as a stock corporation in the Commercial Register of the Canton Basel-City (Syngenta, 2015a). Syngenta's history began 250 years before with its various predecessors (Reinhardt & Shelman, Jan 5 2015). Novartis was the result of a 1996 merger between Ciba-Geigy and Sandoz, which were the two largest pharmaceutical companies in Switzerland at the time (Reinhardt & Shelman, Jan 5 2015). Meanwhile, Zeneca was the result of a merger between a British chemical company, ICI, with Mogen which was a Dutch biotechnology company time (Reinhardt & Shelman, Jan 5 2015). See *Figure 57: Formation of Syngenta*.

At the time of Syngenta's creation, Michael Mack was hired as a CEO with no experience or background in the agricultural business (Reinhardt & Shelman, Jan 5 2015). Mack was tasked with the difficult job of having to bring together two firms with different cultures while also being successful at bringing synergies and decreasing costs (Reinhardt & Shelman, Jan 5 2015). In 2004, the company decided to realign its strategy and become solely an agricultural input firm offering a wide variety of agricultural products (Reinhardt & Shelman, Jan 5 2015).

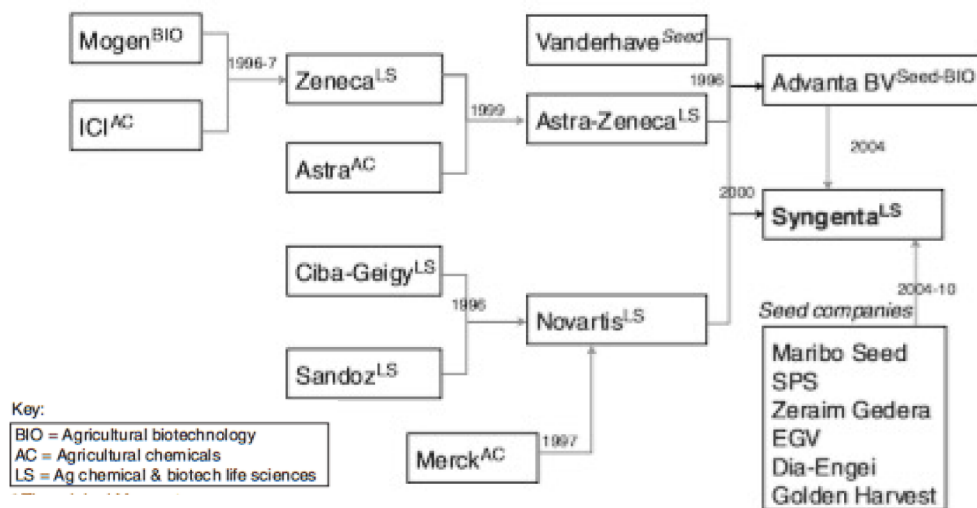
Over the years, Syngenta has undergone several acquisitions and agreements²⁶¹ in the industry. See *Table 51: Syngenta—Acquisitions and Agreements in the pesticide, seeds and*

²⁶⁰ Syngenta has the highest exposure to stigma when it comes to the *Big Six firms*. Monsanto has 2nd highest, Bayer has 3rd highest, BASF has 4th highest, DuPont has 5th highest, and Dow has 6th highest (or lowest) among the Big Six.

²⁶¹ Agreements are described by Pelaez and Mizukawa (2017, p. 1) as “cooperation agreements that in turn allow the resources necessary for the viability of a new productive activity and/or technological innovation to be assimilated and recombined.”

biopesticides Markets. The majority of the acquisitions were in Seeds. Moreover, most of the agreements were in pesticides.

Figure 57: Formation of Syngenta



Source: Adapted from Fuglie, Heisey et al. (Dec 2011, p. 33), Copping (2003), Fernandez-Cornejo (Feb 2004) and Howard (2009)

Table 51: Syngenta—Acquisitions and Agreements in the Pesticide, Seeds and Biopesticides Markets

Syngenta							
Acquisitions (1996–2015)				Agreements (1996–2015)			
Pesticides	Seeds	Biopesticides	Total	Pesticides	Seeds	Biopesticides	Total
4	28	3	35	41	31	8	80

Source: Adapted from Pelaez and Mizukawa (2017, p. 3)

The company describes its R&D research in the following way: “We address farming challenges using various technologies, alone or in combination, within six areas of research. Our innovation centers on chemicals, as spray or seed treatment, native trait breeding, and genetic modification. We use the most advanced technology, such as biologicals, which include naturally occurring organisms, and RNAi, a naturally occurring process that happens in the cells of plants, animals, and people” (Syngenta, 2017b).

Syngenta has research centers located in the following locations (Syngenta, 2017d):

- Europe: Bad Salzuflen, Germany (oilseed rape; barley breeding), Enkhuizen, Netherlands (Vegetables, flower breeding), Ghent, Belgium RNAi (gene) research, Jealott’s Hill, UK (Chemistry, product safety), Landskrona, Sweden (sugar beet breeding), Saint-Sauveur,

France (molecular marker lab), Sarrians, France (Fruit, vegetables breeding), Stein, Switzerland (chemistry, seed treatment)

- U.S.: Clinton, IL, U.S. (biological assessments), Gilroy, CA, U.S. (flowers breeding), Greensboro, NC, U.S. (formulation, product safety), Research Triangle Park, NC, U.S. (biotechnology), Slater, IA, U.S. (corn and soybean breeding), Stanton, MN, U.S. (corn breeding, genetics), Woodland, CA, U.S. (vegetable breeding)
- Latin America: Uberlândia, Brazil (corn and soybean breeding)
- Asia Pacific: Beijing, China (biotechnology) and Goa, India (Chemistry).

Now that context has been provided regarding Syngenta's activities in agricultural biotechnology and their level of exposure to stigma, the following section describes the firms' strategic responses to stigma.

4.4.1.3 Strategic Responses to Stigma

In this section, an in-depth discussion of the strategic responses to stigma employed by Syngenta will be discussed. The section is divided as follows. First, I discuss the passive strategies used (avoidance and dilution). Secondly, I describe the active strategic responses used (defiance, manipulation and destigmatization). The end of this section includes tables with the results of the coding analysis for Syngenta. See *Table 52: Syngenta Strategic Responses to stigma*, *Table 53: Syngenta Strategic Responses to Stigma Summary Table* and *Table 54: Syngenta Supportive Evidence—Illustrative Quotations*.

4.4.1.3.1 Passive Coping Strategies

4.4.1.3.1.1 Avoidance²⁶²

The first strategic response discussed is avoidance. Signs of avoidance of stigma was low for Syngenta. Syngenta frequently and clearly described the fact that stigma was present in their industry. For instance, in 2003 the company stated:

Consumer and Government Resistance to Genetically Modified Organisms May Negatively Affect Syngenta's Public Image and Reduce Sales: Syngenta is active in the field of genetically modified organisms in the seeds area and in biotechnology research and development in seeds and crop protection, with a current focus on North and South America. However, the high public profile of biotechnology and lack of consumer acceptance of products to which Syngenta has devoted substantial resources could

²⁶² Avoidance is the second-order theme with the following three first-order categories: A: Avoiding mention of existence of stigma; B: Escape Behaviors and C: Concealment of hostile audiences' viewpoint.

negatively affect its public image and results. The current resistance from consumer groups, particularly in Europe, to products based on genetically modified organisms because of concerns over their effects on food safety and the environment, may spread to and influence the acceptance of products developed through biotechnology in other regions of the world, which could limit the commercial opportunities to exploit biotechnology. In addition, some government authorities have enacted and others in the future might enact regulations regarding genetically modified organisms which may delay and limit or even prohibit the development and sale of such product (Syngenta, 2014b, p. 7).

For instance, Syngenta also openly admitted to facing controversy in 2015:

Our participation drew criticism from some NGOs—who, in anticipation of EXPO Milano, staged a protest against Syngenta. Their overall charge was that Syngenta is part of a globalized agricultural system based on fossil fuels, chemistry and genetic research, which in their view is unsustainable. We engaged in open discussion and confirmed our view that there is no single solution to the world's food security challenges. Many approaches and methodologies are needed, and we can only be one part of a much wider effort. Investments in agricultural research are a fundamental part of the solution (Syngenta, 2015b, p. 49).

Moreover, the company has discussed the reasons for the existence of stigma when discussing the reasons why people are against GM technology. This is illustrated from 2014, from a quote highlighting the existence of a polarized debate in Europe:

The polarized debate about pollinators and neonicotinoids in Europe, and the contentious issue of the labeling of food containing genetically modified ingredients in the USA were just two which gained significant coverage. The disconnect between urban and rural society continues to pose a threat to the industry's reputation, and is predicated upon beliefs that our products harm human and environmental health and that smallholder farmers are somehow exploited. In truth, our business is reliant upon healthy ecosystems and thriving rural communities—it would be entirely self-defeating for us to want to damage either (Syngenta, 2014a, p. 3).

Another example of Syngenta's recognition of stigma is from 2013, when the firm states:

One of the biggest challenges that the company, and indeed the entire industry, faces is the disconnect between the way we see ourselves and the way an increasingly urban society views agriculture and our contribution to it. There are some entrenched and passionately held beliefs that our products harm the environment and human health, that modern agricultural practices diminish biodiversity and soil fertility and that intellectual property leads to smallholder dependency and increases poverty. These views, in turn, have a detrimental impact on the industry's reputation and often negatively influence the regulatory systems under which we operate (Syngenta, 2013, p. 3).

To summarize, Syngenta did not engage in avoidance strategies. Both A: *Avoiding mention of existence of stigma* (1/16) and C: *Concealment of hostile audiences' viewpoint* (1/16) were only used once each. The next strategic response discussed is dilution.

4.4.1.2.1.2 Dilution²⁶³

The second strategic response discussed is dilution. Stigma dilution was not a strategy that was used by Syngenta. This is primarily because Syngenta does not have the ability to dilute stigma. When Syngenta describes its activities, shielding themselves from controversy by downplaying their role in agricultural biotechnology is not possible. For instance, in 2015, the company stated:

Bringing plant potential to life: We apply world-class science and the most productive research and development in the industry to achieve a step change in agricultural productivity. In more than 90 countries around the world, we enable millions of farmers to improve global food security by making better, more sustainable use of available resources (Syngenta, 2015b).

Another illustration is from 2010: “The path Syngenta is now pursuing recognizes the imperative of yield gain but also goes beyond it, to encompass all the resources involved in achieving global food security” (Syngenta, 2010, p. 8). To summarize, dilution was not something that Syngenta was able to do in response to stigma, and therefore obtained a score of 0 for *D: Expectation Blurring* (0/16). The next strategic responses discussed are the active strategic responses to stigma. These include defiance, manipulation and destigmatization.

4.4.1.3.2 Active Coping Strategies

4.4.1.3.2.1 Defiance²⁶⁴

The third strategic response discussed is defiance. Syngenta engaged in quite extensive defiance behavior. An example of a defiance strategy is from 2009 when the company criticised those against GM technology:

The slide toward “opinion-based” regulation is a real threat to technological progress and denies growers, in developed and developing countries, access to the products they need to improve yields and thus their livelihoods. The indulgence of imaginary fears suppresses innovation and harms economic growth. Worse, it is a betrayal of the hungry (Syngenta, 2009, p. 5).

Moreover, the company made a statement claiming that those who are against GM technologies are uninformed:

As the public becomes more informed about the benefits of these products—and about the use of science to explore and understand safety issues and risks—we believe that

²⁶³ Dilution is the second-order theme with only one first-order category: D: Expectation Blurring

²⁶⁴ Defiance the second-order theme with three first-order categories: E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G: Critical of GMO Labelling.

products created through biotechnology will gain widespread acceptance (Syngenta, 2003b, p. 14)

In addition, the company has also contested lawsuits and openly challenged governments and regulations. For instance, the Syngenta challenged the EU's partial moratorium on thiamethoxam²⁶⁵ in 2014:

We are contesting these lawsuits and claims—and challenging the EU Commission's partial moratorium on thiamethoxam—because all our research, and many years of independent monitoring, have shown that neonicotinoids do not damage bee health when used properly. And farmers in the EU are increasingly concerned that the moratorium is reducing yields and forcing them to use older, less effective chemicals (Syngenta, 2014a, p. 40).

The company also makes claims that the European Union's actions are based on political pressure instead of scientific evidence, effectively, discrediting their decision. In 2013, the company stated:

We believe the EU's action has been driven by public disquiet and political pressure rather than scientific evidence. Nonetheless, the issue highlights the challenges we face in some countries regarding the societal perception of our products and what we do (Syngenta, 2013, p. 42).

The firm also actively discredit concerns raised by stakeholders:

Some NGOs have raised concerns about the safe use of paraquat, the active ingredient in the well-established Syngenta herbicide, GRAMOXONE®. Paraquat is registered in more than 120 countries, which between them produce over 95 percent of global agricultural output. Farmers around the world have been using this herbicide safely and effectively for over 40 years (Syngenta, 2006b, p. 12).

Moreover, Syngenta has made critical statements regarding regulations imposed by the European Union:

For new technology to play its role, however, it must be available to those who need it. Politically driven restrictions on the application of suitable technology handicap growers in their drive to raise yield. The European Union, in particular, provides a worrying example. From being a net food exporter, the EU has moved backwards to become a net importer forced recently to return all set-aside land to production to meet growing demand. This has occurred despite the Union's favorable climatic conditions for agriculture, growers' high levels of expertise, and the presence of research—based agribusiness companies in Europe. EU politicians are now aiming to restrict the use of many crop protection products, despite sound scientific evidence of their efficacy and safety over many years. Encouraged in particular by a leading Member State, the EU also continues to hinder the

²⁶⁵ Thiamethoxam is a broad-spectrum insecticide that effectively controls insects. It is synthetic in origin, being a second-generation neonicotinoid compound belonging to the chemical subclass the thianicotinyls (AgChem, 2017)

introduction of seeds biotechnology. Growers in much of the world have already been using this safely and successfully for more than a decade (Syngenta, 2007a, p. 2).

Another example of the company exhibiting defiance is from 2015 when the company states that the EU's ban on neonicotinoid seeds harms farmers:

European farmers continue to face crop damage resulting from the EU's temporary suspension of neonicotinoid seed treatment, which prevents use of the insecticide CRUISER® (Syngenta, 2015b, p. 17).

Since the restriction on use began, EU farmers have expressed increasing concern that it has reduced yields and forced them to use older, less effective chemicals. Several EU countries have allowed temporary use of neonicotinoids in emergency situations so that farmers can protect their crops from pests (Syngenta, 2015b, p. 44).

To summarize, the most frequently used defiance strategies for Syngenta were *F: Critical of legislation and/or regulations about GMOs (13/16)* and *E: Defiance against those who are against GMOs (7/16)*. The next strategic response discussed is manipulation.

4.4.1.3.2.2 Manipulation²⁶⁶

The fourth strategic response discussed is manipulation. Manipulation included statements made about being politically active, and involved with governments to create or change policy regarding global seed and agrochemical or chemical legislation. Syngenta engaged in manipulation often and frequently. They used a variety of strategies to manipulate the perception of stigma on both a firm-level and on an industry-level. An example is from 2015, when Syngenta is critical of the regulatory requirements imposed on GM technologies:

Regulatory standards and trial procedures are continuously changing. Responding to these changes and meeting existing and new requirements may be costly and burdensome. In addition, changing regulatory standards may affect Syngenta's ability to maintain its products on the market (Syngenta, 2015c, p. 4).

In addition, the firm has also engaged in training for farmers in order to promote their products. Syngenta has also admitted to manipulating the minds of schoolchildren when it comes to agrochemicals. An example is from 2007, when the firm stated:

Promoting safe use among smallholder farmers in Mexico for 20 years our LUPPA program has been promoting sustainable agriculture and the safe use of chemicals in southern Mexico. The program was launched in 1987 to help farmers whose maize crops

²⁶⁶ Manipulation the second-order theme with six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J : Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Members of agribiotechnology industry associations.-

were being severely damaged by insect pests. We provide spraying equipment and protective clothing, and teach farmers to use our crop protection products safely and effectively to boost yields. The training does not stop with the farmers themselves. We teach local schoolchildren about the importance of protecting the environment and the safe use of agrochemicals. They take this information home and pass it on to their families (Syngenta, 2007b, p. 15).

In 2000, the company also stated:

The company participates in many sustainable agriculture programs around the world, notably as a pioneer and ongoing supporter of zero tillage projects. It also participates in integrated crop management and resistance management programs, and has initiated treatment optimization programs. An example is the Syngenta Crop Productivity and Farmer Training Center at Santa Rosa in the Philippines, where 2,000 farmers each year have been trained in integrated crop management. More than 25% of the 50,000 farmers in the surrounding rice growing region are now graduates of this program (Syngenta, 2000, p. 13).

Moreover, the company has also engaged in political advocacy:

We will put all our company's passion and skills behind meeting them, but we don't have all the answers. The scale and scope of the challenges demand the broad engagement of all those concerned with the future of agriculture. So we will seek to work in partnership with governments, farmers, NGOs, international organizations and academics (Syngenta, 2013, p. 13).

Another illustrative quotation is from 2003, when Syngenta stated:

We focus on external stakeholders and work in partnership. We will: Participate in dialogue with authorities and regulators through a strong public affairs program (Syngenta, 2003a, p. 1).

In addition, the company has admitted to participating in debates at the World Economic Forum:

We are also a member of the World Economic Forum and we actively participate in its work groups for the "New Vision for Agriculture," and the "Water Initiative." As a global science-based company, we are increasingly engaged in international forums related to food security, resource efficiency, and the development of rural economies (Syngenta, 2010, p. 34).

The Syngenta approach to managing stewardship is to respond to local needs. We work alone or in partnership with government, NGOs or industry partners, and involve our people at field, national, regional and global levels (Syngenta, 2004, p. 10).

The firm has also admitted to intent to change consumer perception:

Syngenta is a major participant in the public debate. Syngenta's activities have been conducted in conjunction with its local constituencies and through trade associations around the world. Syngenta's approach to its involvement in biotechnology has been one of openness and dissemination of information based upon: education through provision of information about plant science and genetics; clear statements of the benefits of

biotechnology in terms of cost and quality; emphasis on consumer choice (Syngenta, 2014b, p. 14).

Syngenta continued to be active in this debate and to demonstrate our profound contribution to the planet and society. Convincing an often skeptical and entrenched audience will take determination, but I remain confident that we are on the right path (Syngenta, 2014a, p. 3).

The company also uses storytelling and anecdotal evidence to convince stakeholders of GM legitimacy. An example is from 2006, when the company states:

'The ground I farm varies in composition and with that come different weed issues,' says Curt Christenson of Christenson Farms in Drayton, USA. 'AXIAL® provides excellent control of all four problem grass weeds on my farm, regardless of soil type. Aside from controlling the grasses in my wheat, the wide application window of AXIAL® on both the crop and weeds and the excellent crop tolerance across the board are my favorite attributes,' Christenson explains. 'Those qualities can reduce many production risks' (Syngenta, 2006a, p. 9).

Syngenta also uses fear tactics to manipulate stigma. An example is from 2009:

While the financial crisis grabbed the headlines, the underlying challenge of ensuring food security for a growing world population remained central to the agenda of governments worldwide. The magnitude of this challenge was reinforced by the UN's Food and Agriculture Organization (FAO) which announced in June that the combination of global economic slowdown and high food prices had pushed another 100 million people into a state of chronic hunger and poverty. The total number of people on the planet who are malnourished has now surpassed the one billion mark (Syngenta, 2009, p. 4).

The most frequently used manipulation strategies for Syngenta include: *H: Providing education/training (16/16), L: Use of Fear Tactics (16/16), and I: Political advocacy/lobbying (15/16)*. To summarize, Syngenta uses very high manipulation techniques on an ongoing basis change consumer perception. The next strategic response discussed is destigmatization.

4.4.1.3.2.3 Destigmatization²⁶⁷

The fifth and final strategic response discussed is destigmatization. Syngenta uses extensive destigmatization techniques. The company reframes the industry in terms of sustainable agriculture on an ongoing and consistent basis over the years. For instance, in 2000, the company stated:

Poor farming practices expose soil to wind and rain erosion, leaving millions of hectares infertile. Every year, the world loses enough land to produce 20 million tons of grain,

²⁶⁷ Destigmatization is the second-order theme with six first-order categories: N: Sustainable Agriculture

and some 40 percent of existing farmland is already seriously degraded. Raising awareness of this issue and promoting soil conservation solutions is critical for sustainable agriculture: rebuilding lost fertile soil can take nature hundreds of years (Syngenta, 2014a, p. 12).

Moreover, in 2001, the company stated:

Syngenta has carried out a number of detailed stakeholder projects to assess the views of important groups outside the Company. One project focused on sustainable agriculture and included discussions with international organizations, government representatives, academics, financial investors and the NGO community (Syngenta, 2001, p. 27).

To summarize, Syngenta engaged in destigmatization every year from 2000 to 2015, obtaining a score of 16 for *N: Sustainable Agriculture* (16/16). The following section provides a summary of the strategic responses used by Syngenta in response to stigma.

4.4.1.4 Summary Description and Table

To recap, Syngenta engaged in very low avoidance strategies, very low dilution, moderate defiance, very high manipulation and very high destigmatization tactics. Syngenta uses very little passive strategic responses to deal with stigma. In other words, the firm scores very low for both avoidance and dilution. This makes intuitive sense as it is difficult for single category membership firms to avoid stigma as they are not capable of hiding behind their other businesses to draw attention away from stigmatized activities. Instead of using passive strategic responses to stigma, Syngenta uses extensive active strategic responses to try to move the industry from a state of stigma to one of legitimacy. More precisely, Syngenta uses a wide range of active responses, including defiance (moderate), manipulation (very high) and destigmatization (very high) tactics. These active strategic responses are used on a constant basis and the firm very openly admits to using these tactics. Specifically, the company engages in very high manipulation and very high destigmatization strategies. See *Table 52: Syngenta Strategic Responses to stigma*, *Table 53: Syngenta Strategic Responses to Stigma Summary Table* and *Table 54: Syngenta Supportive Evidence—Illustrative Quotations*.

Table 52: Syngenta Strategic Responses to Stigma²⁶⁸

STRATEGIC RESPONSES TO STIGMA ANALYSIS														
	Passive Strategic Responses				Active Strategic Responses									
	Avoidance of Stigma			Dilution	Defiance of Stigma			Manipulation of Stigma						De-stigmatization
	A	B	C		E	F	G	H	I	J	K	L	M	
2000	–	–	X	–	–	–	–	X	–	–	–	X	–	X
2001	X	–	–	–	–	–	–	X	X	X	–	X	–	X
2002	–	–	–	–	X	–	–	X	X	–	X	X	–	X
2003	–	–	–	–	X	X	–	X	X	X	X	X	X	X
2004	–	–	–	–	X	X	–	X	X	X	X	X	X	X
2005	–	–	–	–	X	X	–	X	X	X	X	X	X	X
2006	–	–	–	–	–	X	–	X	X	–	X	X	X	X
2007	–	–	–	–	–	X	–	X	X	–	X	X	X	X
2008	–	–	–	–	–	X	–	X	X	–	–	X	X	X
2009	–	–	–	–	X	X	–	X	X	–	X	X	X	X
2010	–	–	–	–	–	X	–	X	X	–	X	X	X	X
2011	–	–	–	–	–	X	–	X	X	–	X	X	X	X
2012	–	–	–	–	–	X	–	X	X	–	X	X	X	X
2013	–	–	–	–	X	X	–	X	X	X	X	X	X	X
2014	–	–	–	–	–	X	–	X	X	X	X	X	X	X
2015	–	–	–	–	X	X	–	X	X	X	X	X	X	X
SUM ²⁶⁹	1	0	1	0	7	13	0	16	15	7	13	16	13	16
	2/48 = 4%			0/16 = 0%	20/48 = 42%			80/96 = 83%						16/16 = 100%
Usage	Very Low			Very Low	Moderate			Very High						Very High

Source: Own Elaboration

Table 53: Syngenta Strategic Responses to Stigma Summary Table

	Passive Coping Strategies		Active Coping Strategies		
	Avoidance	Dilution	Defiance	Manipulation	De-stigmatization
Very Low (0–20%)	X	X			
Low (21–40%)					
Moderate (41 - 60%)			X		
High (61–80%)					
Very High (81 - 100%)				X	X

Source: Own Elaboration²⁷⁰

²⁶⁸ (X) marks the presence of first-order category, while (–) marks the absence of the first-order category

²⁶⁹ The total score for each column is tallied (1 point for every (X) and 0 points for every (–). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.

²⁷⁰ Percentages obtained from Table 51: Syngenta Strategic Responses to Stigma. Percentages rounded to the nearest percentage point.

Table 54: Syngenta Supportive Evidence—Illustrative Quotations

First-Order Categories		Illustrative Quotations	
AVOIDANCE			
A ²⁷¹ = Avoiding mention of existence of stigma,	1.	[“...] the high public profile of biotechnology and lack of consumer acceptance of products to which Syngenta has devoted substantial resources could negatively affect its public image and results. The current defiance from consumer groups, particularly in Europe, to products based on genetically modified organisms, because of concerns over their effects on food safety and the environment, may spread to and influence the acceptance of products developed through biotechnology in other regions of the world, which could limit the commercial opportunities to exploit biotechnology. Syngenta also produces and markets crop protection chemical products, some of which are facing increasing defiance from consumer groups because of concerns over their alleged effects on food safety and the environment. These consumer groups oftentimes attempt to influence governmental regulatory bodies to restrict the use of crop protection chemical products in their jurisdictions” (Syngenta, 2015c, p. 9).	
B = Escape Behaviors	NA ²⁷²		
C ²⁷³ = Concealment of hostile audiences ²⁷⁴ viewpoint	2.	“Syngenta also produces and markets crop protection chemical products, some of which are facing increasing defiance from consumer groups because of concerns over their alleged effects on food safety and the environment” (Syngenta, 2015c, p. 9).	
STIGMA DILUTION			
D = Expectation Blurring	NA ²⁷⁵		
DEFIANCE			
E = Defiance against those who are against GMOs	3.	“The slide toward ‘opinion-based’ regulation is a real threat to technological progress and denies growers, in developed and developing countries, access to the products they need to improve	

²⁷¹ Supportive Evidence for first-order Category A show the absence of concealment tactics. For first-order Category A, if the company does not conceal the existence of stigma, an illustrative quotation of the firm not demonstrating the concealment of the existence of stigma is shown as an illustrative quotation.

²⁷² No findings for Syngenta.

²⁷³ Supportive Evidence for first-order Category C show the absence of concealment tactics. For first-order Category C, if the company does not conceal the hostile audiences' viewpoints/concerns, an illustrative quotation of the firm not demonstrating the concealment of hostile audiences' viewpoints/concerns is shown as an illustrative quotation.

²⁷⁴ Hostile audience represents those who stigmatize the industry. This term was used by Hudson and Okhuyesen (2009), Tracey and Phillips (2016) and Vergne (2012).

²⁷⁵ No findings for Syngenta.

	yields and thus their livelihoods. The indulgence of imaginary fears suppresses innovation and harms economic growth. Worse, it is a betrayal of the hungry" (Syngenta, 2009, p. 5).
F = Critical of legislation and/or regulations about GMOs	4. "European farmers continue to face crop damage resulting from the EU's temporary suspension of neonicotinoid seed treatment, which prevents use of the insecticide CRUISER®. No current alternatives are as effective as CRUISER®" (Syngenta, 2015b, p. 17).
G = Critical of GMO labeling	NA ²⁷⁶
MANIPULATION	
H = Providing education/training	5. "Declining, unreliable crop yields in the arid area of Laikipia in Kenya are threatening the livelihood of some 50,000 smallholder farmers who depend on agriculture to survive. Syngenta has developed a holistic training program to help these farmers boost yields and sustain their livelihoods" (Syngenta, 2008, p. 13).
I = Political advocacy/lobbying	6. "The Syngenta approach to managing stewardship is to respond to local needs. We work alone or in partnership with government, NGOs or industry partners, and involve our people at field, national, regional and global levels" (Syngenta, 2004, p. 10).
J = Explicit intent to change perceptions of consumers	7. "Syngenta continued to be active in this debate and to demonstrate our profound contribution to the planet and society. Convincing an often skeptical and entrenched audience will take determination, but I remain confident that we are on the right path" (Syngenta, 2014a, p. 3).
K = Use of anecdotal evidence/storytelling	8. "The ground I farm varies in composition and with that come different weed issues,' says Curt Christenson of Christenson Farms in Drayton, USA. 'AXIAL® provides excellent control of all four problem grass weeds on my farm, regardless of soil type. Aside from controlling the grasses in my wheat, the wide application window of AXIAL® on both the crop and weeds and the excellent crop tolerance across the board are my favorite attributes,' Christenson explains. 'Those qualities can reduce many production risks'" (Syngenta, 2006a, p. 9).
L = Use of Fear Tactics	9. "In 1950, the world's population was just 2.5 billion. In October 2011, it hit 7 billion. We can expect another 2 billion people on our planet by 2050. Meanwhile, urbanization and soil erosion are reducing available farmland. So while one hectare could feed two people in 1950, by 2030 it will have to feed five. Already, food demand is outstripping supply in some regions. Farmers must grow more from less: our business is to help make that possible" (Syngenta, 2011, p. 8).

²⁷⁶ No findings for Syngenta.

M = <i>Membership in Agribiotechnology Industry Associations</i>	10. "We are also a member of the World Economic Forum and we actively participate in its work groups for the 'New Vision for Agriculture,' and the 'Water Initiative.' As a global science-based company, we are increasingly engaged in international forums related to food security, resource efficiency, and the development of rural economies" (Syngenta, 2010, p. 34).
DESTIGMATIZATION	
N = <i>Sustainable Agriculture</i>	11. "The Good Growth Plan and the Syngenta Foundation for Sustainable Agriculture, which continued its excellent job in supporting smallholders across the world, really place Syngenta at the forefront of sustainability in our industry and make, in my opinion, a real difference" (Syngenta, 2015b, p. 3).

Source: Own Elaboration

CHAPITRE 5/CHAPTER 5

SYNTHÈSE CROISÉES DES CAS ET L'ÉLABORATION D'UN MODÈLE THÉORIQUE/CROSS CASE SYNTHESIS AND THEORETICAL MODEL DEVELOPMENT

The previous chapter described the individual cases in my analysis and painted a portrait of their strategic responses to stigma. In order to answer my research question, in this section, the results of the individual cases are cross-analyzed to develop theory. In other words, the cases are treated as a collective in order to identify similarities, differences and patterns between cases. The ultimate objective of the analysis is to generate a model explaining the relationship between exposure to stigma and strategic response to stigma. My cross-case analysis answers the following research question: ***How does exposure to stigma affect strategic response to stigma?***

First, I present an overview of the cross-case findings as well as my theoretical model, the *Stigma Exposure-Response Model*. Following this, I analyze each of the five strategic responses in-depth by individually discussing the results of each of the five strategies (avoidance, dilution, manipulation, defiance, destigmatization) for each firm and each quadrant. Propositions are simultaneously put forth in order to develop the *Stigma Exposure-Response Model*. In order to organize the results of my cross-case analysis, summary tables are used throughout to provide evidence for my claims.

5.1 Cross-Case Analysis Findings Brief Overview

This section provides an overview of the results of the cross-case analysis. See *Figure 58: Cross Case Results Overview I* for an overview of the results for each quadrant along each strategy. *Table 55: Cross Case Results Overview II*, *Table 56: Overview of Strategic Responses Used* and *Table 57: Cross Case Results Overview III* provide the results shown in alternative ways. The following section, section 5.2 show an overview of my Stigma Exposure-Response Model. An in-depth explanation of the results follows in section 5.3.

Table 55: Cross Case Analysis Overview II

<i>Exposure to Stigma</i>	<i>Passive Strategic Responses</i>		<i>Active Strategic Responses</i>		
	<i>Avoidance</i>	<i>Dilution</i>	<i>Defiance</i>	<i>Manipulation</i>	<i>De-stigmatization</i>
Syngenta (1 st Highest Stigma Exposure) ²⁷⁸	Very Low	Very Low	Moderate	Very High	Very High
Monsanto (2 nd Highest Stigma Exposure) ²⁷⁹	Very Low	Very Low	High	High	Very High
Bayer (3 rd Highest Stigma Exposure) ²⁸⁰	Moderate	Very High	Very Low	High	High
BASF (4 th Highest Stigma Exposure) ²⁸¹	Moderate	Very High	Very Low	Moderate	Very High
DuPont (5 th Highest Stigma Exposure) ²⁸²	Low	Very High	Very Low	Low	Moderate
Dow (6 th Highest Stigma Exposure) ²⁸³	Low	Very High	Very Low	Low	Low

Source: Own Elaboration

Table 56: Overall strategic Responses Used²⁸⁴

	Very Low					Low					Moderate					High					Very High				
	A	DI	D	M	D	A	DI	D	M	D	A	DI	D	M	D	A	DI	D	M	D	A	DI	D	M	D
					S			E		S			E		S			E		S			E		S
Dow			X			X			X	X												X			
DuPont			X			X			X						X							X	X		
BASF			X								X			X								X			X
Bayer			X								X											X			
Monsanto	X	X														X	X							X	X
Syngenta	X	X									X								X				X	X	X

Source: Own Elaboration

²⁷⁸ Results of Syngenta avoidance strategy demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).
²⁷⁹ Results of Monsanto avoidance strategy demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).
²⁸⁰ Results of Bayer avoidance strategy demonstrated in 4.1.2.4 Summary Description and Table (Bayer).
²⁸¹ Results of BASF avoidance strategy demonstrated in 4.1.1.4 Summary Description and Table (BASF).
²⁸² Results of DuPont avoidance strategy demonstrated in 4.2.2.4 Summary Description and Table (DuPont).
²⁸³ Results of Dow defiance strategy demonstrated 4.2.1.4 Summary Description and Table (Dow).
²⁸⁴ A stands for Avoidance; DI stands for Dilution; DE stands for Defiance; M stands for Manipulation; DS stands for Destigmatization.

Table 57: Cross Case Results Overview III

Exposure to Stigma	Level of Exposure²⁸⁵	Passive Strategic Responses		Active Strategic Responses		
		Avoidance²⁸⁶	Dilution²⁸⁷	Defiance²⁸⁸	Manipulation²⁸⁹	De-stigmatization²⁹⁰
Single Category Membership Firms (Quadrant 3 & 4)	1 st and 2 nd	Very Low	Very Low	Moderate—High	High—Very High	Very High
Multiple Category Membership Firms (Quadrant 1 & 2)	3 rd , 4 th , 5 th and 6 th	Low—Moderate	Very High	Very Low	Low—High	Low—Very High
All E.U Firms (Quadrant 1 & 4)	1 st , 3 rd , and 4 th	Very Low—Moderate	Very Low—Very High	Very Low—Moderate	Moderate—Very High	High—Very High
All U.S. Firms (Quadrant 2 & 3)	2 nd , 5 th , and 6 th	Very Low—Low	Very Low—Very High	Very Low—High	Low—High	Low—Very High
Single Category Membership Firms + E.U Firm (Quadrant 4)	1 st	Very Low	Very Low	Moderate	Very High	Very High
Single Category Membership Firms + U.S. Firm (Quadrant 3)	2 nd	Very Low	Very Low	High	High	Very High
Multiple Category Membership Firms + E.U Firm (Quadrant 1)	3 rd and 4 th	Moderate	Very High	Very Low	Moderate—High	High—Very High
Multiple Category Membership Firms + U.S. Firm (Quadrant 2)	5 th and 6 th	Low	Very High	Very Low	Low	Low—Moderate

Source: Own Elaboration

²⁸⁵ 1st. Highest exposure to stigma; 2nd. 2nd highest exposure to stigma; 3rd. 3rd highest exposure to stigma; 4th. 4th highest exposure to stigma (or 3rd lowest exposure to stigma); 5th. 5th highest exposure to stigma (or 2nd lowest exposure to stigma); 6th. 6th highest exposure to stigma (or 1st lowest exposure to stigma).

²⁸⁶ Results for Avoidance strategy of individual firms summarized in Table 55: Cross Case Analysis Overview in the 1st column.

²⁸⁷ Results for Dilution strategy of individual firms summarized in Table 55: Cross Case Analysis Overview in the 2nd column.

²⁸⁸ Results for Defiance strategy of individual firms summarized in Table 55: Cross Case Analysis Overview in the 3rd column.

²⁸⁹ Results for Manipulation strategy of individual firms summarized in Table 55: Cross Case Analysis Overview in the 4th column.

²⁹⁰ Results for Destigmatization strategy of individual firms summarized in Table 55: Cross Case Analysis Overview in the 5th column.

5.2 Cross-Case Analysis Findings

The cross-case results for all five strategic responses to stigma allow me to put forth the *Stigma Exposure-Response Model*. The model is depicted in *Figure 59: Stigma-Exposure Response Model*. The model answers my research question: **How does exposure to stigma (x) affect strategic response to stigma (y)?** The model begins by differentiating between lowest exposure to stigma firms and highest exposure to stigma firms. The left-hand side of the model describes the strategic responses of the firms with lowest exposure to stigma. The right-hand side of the model describes the strategic responses of the firms with highest exposure to stigma.

- **Level 1: Exposure to Stigma:** Level 1 of the Stigma Exposure-Response Model is divided into two branches: lowest level of exposure to stigma and highest level of exposure to stigma.
 - *Level 1 (a): Lowest exposure to stigma.*
 - *Level 1 (b): Highest exposure to stigma.*

- **Level 2: Strategic Response to Stigma:** Level 2 of the Stigma Exposure-Response Model is divided into two branches: greater use of passive strategic responses to stigma, and greater use of active strategic responses to stigma.
 - *Level 2 (a): Greater use of passive strategic responses to stigma.*
 - *Level 2 (b): Greater use of active strategic responses to stigma.*

- **Level 3: Outcome:** Level 3 of the Stigma Exposure-Response Model I is divided into two branches: less active in trying to move the industry from stigmatization to legitimacy, and more active in trying to move the industry from stigmatization to legitimacy.
 - *Level 3 (a): Less active in moving the industry from a state of stigma to one of legitimacy.*
 - *Level 3 (b): More active in moving the industry from a state of stigma to one of legitimacy.*

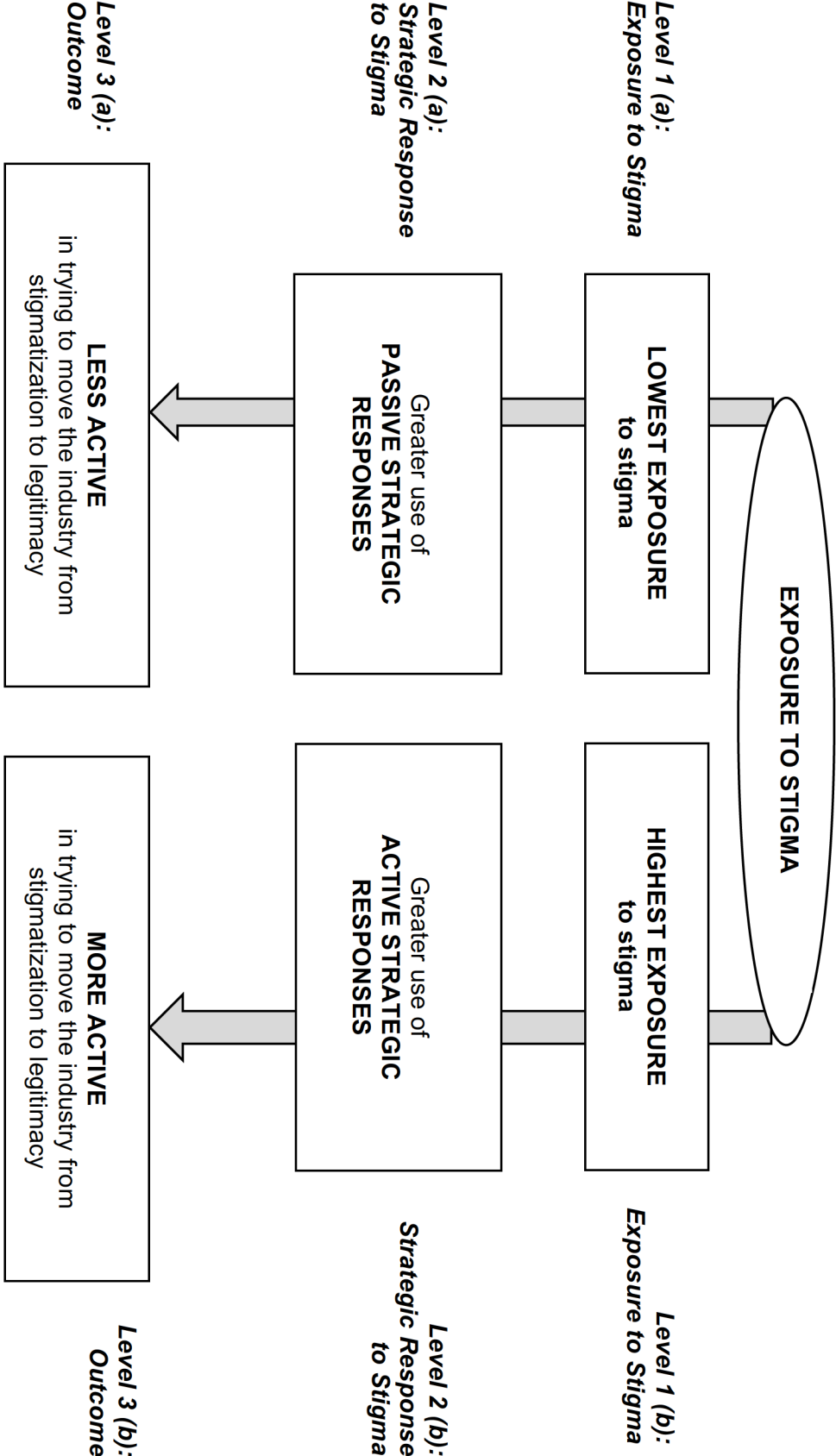
My model predicts that firms which have less exposure to stigma (level 1) engage in greater use of passive strategic responses (level 2a), which means these firms are less active in moving the industry from a state of stigma to one of legitimacy (level 3a). My model also predicts firms which have more exposure to stigma (level 1b) engage in greater use of active strategic responses (level 2b), which means these firms are more active in moving the industry from a state of stigma to one of legitimacy (level 3b). See *Table 58: Propositions Overview and Contribution to Theory* and *Figure 59: Stigma Exposure-Response Model*. In the pages that follow, a detailed account of how my propositions were developed is presented.

Table 58: Propositions Overview and Contribution to Theory

Proposition #	Description	Element of Model
Proposition 1 (Avoidance Strategy)	<i>Firms with lowest exposure to stigma engage in more avoidance strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	1 and 2 are put together to form Proposition 3.
Proposition 2 (Dilution Strategy)	<i>Firms with lowest exposure to stigma engage in more dilution strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	
Proposition 3 (Passive Strategies)	<i>Firms with lowest exposure to stigma engage in more passive strategic responses when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	
Proposition 4 (Defiance Strategy)	<i>Firms with lowest exposure to stigma engage in less defiance strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	4, 5 and 6 are put together to form Proposition 7.
Proposition 5 (Manipulation Strategy)	<i>Firms with lowest exposure to stigma engage in less manipulation strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	
Proposition 6 (Destigmatization Strategy)	<i>Firms with lowest exposure to stigma engage in less destigmatization strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	
Proposition 7 (Active strategies)	<i>Firms with lowest exposure to stigma engage in less active strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.</i>	Derived from 7.
Proposition 8 (Stigma to Legitimacy)	<i>Firms with lowest exposure to stigma engage in less active strategies with the attempt of moving the industry from stigma to legitimacy than do firms with highest exposure to stigma.</i>	

Source: Own Elaboration

Figure 59 : Stigma Exposure-Response Model²⁹¹



Source: Own Elaboration

²⁹¹ Built using propositions 1, 2, 3,4,5,6, and 7.

In this section, the results of the cross-case analysis are described in-depth. Passive strategic responses (avoidance, dilution) are analyzed in section 5.2.1, followed by active strategic responses (defiance, manipulation, destigmatization) in section 5.2.2.

5.2.1 Passive Strategic Responses

5.2.1.1 Avoidance Strategy

In this section, the findings of the avoidance strategy cross-case analysis are elaborated. Avoidance is the second-order themes encompassing three first-order categories; *A: Avoiding mention of existence of stigma*; *B: Escape Behaviors*; and *C: Concealment of Audiences' Viewpoints*. See *Table 59: Avoidance of Stigma Strategy Results I*, *Figure 60: Avoidance of Stigma Strategy Results II*, *Table 60: Avoidance of Stigma Strategy Results III* for an overview of the results. An in-depth description follows.

Table 59: Avoidance of Stigma Strategy Results I

	BASF			Bayer			Dow			DuPont			Monsanto			Syngenta		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
2000	–	–	–	X	–	X	–	–	X	–	–	–	–	–	–	–	–	X
2001	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	X	–	–
2002	–	–	X	X	–	X	–	–	–	–	–	X	–	–	–	–	–	–
2003	–	–	X	X	–	X	–	–	X	–	–	X	–	X	–	–	–	–
2004	–	–	X	–	–	X	X	–	X	–	–	X	–	–	–	–	–	–
2005	–	–	X	–	–	X	X	–	X	–	–	X	–	–	–	–	–	–
2006	–	–	X	X	–	X	X	–	X	–	–	X	–	–	–	–	–	–
2007	X	–	X	–	–	X	X	–	X	–	–	X	–	–	–	–	–	–
2008	–	–	X	–	–	–	X	–	X	–	–	X	–	–	–	–	–	–
2009	–	–	X	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
2010	–	–	X	–	–	X	–	–	–	–	–	X	–	–	–	–	–	–
2011	X	–	X	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–
2012	–	X	X	X	–	–	–	–	–	–	–	X	–	–	–	–	–	–
2013	X	–	X	X	–	X	–	–	–	–	–	X	–	–	–	–	–	–
2014	X	–	X	X	–	X	–	–	–	–	–	X	–	–	–	–	–	–
2015	X	–	X	X	–	X	–	–	–	–	–	X	–	–	–	–	–	–
SUM ²⁹²	5	1	14	9	0	11	5	0	7	0	0	14	0	1	0	1	0	1
	20/48 = 42%			20/48 = 42%			12/48 = 25%			14/48 = 29%			1/48 = 2%			2/48 = 4%		
Response Usage	Moderate			Moderate			Low			Low			Very Low			Very Low		

Source: Own Elaboration

²⁹² The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage.

Figure 60: Avoidance of Stigma Strategy Results II²⁹³

Lowest Exposure to Stigma		Very Low Avoidance (0–20%)	Low Avoidance (21–40%)	Moderate Avoidance (41–60%)	High Avoidance (61–80%)	Very High Avoidance (81–100%)
↓	Dow		X			
	DuPont		X			
	BASF			X		
	Bayer			X		
Highest Exposure to Stigma	Monsanto	X				
	Syngenta	X				

Source: Own Elaboration

Table 60: Avoidance of Stigma Strategy Results III

Firms	Quadrant	Exposure to Stigma	Use
Individual Firms			
Syngenta		1 st Highest Stigma Exposure ²⁹⁴	Very Low
Monsanto		2 nd Highest Stigma Exposure ²⁹⁵	Very Low
Bayer		3 rd Highest Stigma Exposure ²⁹⁶	Moderate
BASF		4 th Highest Stigma Exposure ²⁹⁷	Moderate
DuPont		5 th Highest Stigma Exposure ²⁹⁸	Low
Dow		6 th Highest Stigma Exposure ²⁹⁹	Low
Category Memberships			
Single Category Membership Firms	Quad 3 & 4	1 st and 2 nd Highest Stigma Exposure	Very Low
Multiple Category Membership Firms	Quad 1 & 2	3 rd , 4 th , 5 th , and 6 th Highest Stigma Exposure	Low—Moderate
Global Headquarters Location			
All E.U Firms	Quad 1 & 4	1 st , 3 rd and 4 th Highest Stigma Exposure	Very Low—Moderate
All U.S. Firms	Quad 2 & 3	2 nd , 5 th , and 6 th Highest Stigma Exposure	Very Low—Low
Quadrants			
Single Category Membership Firms + E.U Firm	Quad 4	1 st Highest Stigma Exposure	Very Low
Single Category Membership Firms + U.S. Firm	Quad 3	2 nd Highest Stigma Exposure	Very Low
Multiple Category Membership Firms + E.U Firm	Quad 1	3 rd and 4 th Highest Stigma Exposure	Moderate
Multiple Category Membership Firms + U.S. Firm	Quad 2	5 th , and 6 th Highest Stigma Exposure	Low

Source: Own Elaboration

²⁹³ Results for percentage scores obtained for each company in the case presentation chapter. Results demonstrated in Table 57: Avoidance of Stigma Strategy Results I.

²⁹⁴ Results of Syngenta avoidance demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).

²⁹⁵ Results of Monsanto avoidance demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).

²⁹⁶ Results of Bayer avoidance demonstrated in 4.1.2.4 Summary Description and Table (Bayer).

²⁹⁷ Results of BASF avoidance demonstrated in 4.1.1.4 Summary Description and Table (BASF).

²⁹⁸ Results of DuPont avoidance demonstrated in 4.2.2.4 Summary Description and Table (DuPont).

²⁹⁹ Results of Dow avoidance strategy demonstrated 4.2.1.4 Summary Description and Table (Dow).

(1) Quadrant 1: BASF and Bayer

Quadrant 1 comprises BASF and Bayer. First, BASF claimed to be very willing to listen to stakeholders, and care about the concerns expressed. However, the company avoided explicitly mentioning the specific concerns addressed by stakeholders. In other words, the firm most often indirectly mentioned concerns of public approval without explicitly mentioning the type of disapproval. Generic statements in the company's Form 20-F reports described stigma as a risk factor, however, mention of stigma was brief. Basic statements about consumer acceptance were made without in-depth discussion of the firms' recognition of the reasons for stigma or direct responses to the stigma. In other words, BASF did not acknowledge stakeholder concerns directly. Instead, general statements regarding efforts to improve public images were made. However, they were usually unspecific and did not address the agricultural biotechnology sector, but there were exceptions to this. BASF also exhibited escape behaviors in 2012 when the firm moved its global headquarters for agriculture out of Europe due to the stigma faced there. Results for BASF show that the most common avoidance behavior for BASF was *C: Concealment of Hostile Audiences' Viewpoints (14/16)*. Second most common was *A: Avoiding Mention of Existence of Stigma (5/16)*. The least common was *B: Escape Behaviors (1/16)*. Overall BASF engaged in moderate avoidance of stigma (20/48).

Bayer, as with BASF avoided explicitly mentioning the fact that they were trying to address stigma and change public perception by casting doubt on public concerns. In other words, the company did not draw attention to the fact that the company faces controversy for their GMO activities. Moreover, as BASF did, Bayer does not explicitly mention the issue of GMO acceptance, even when mentioning consumer acceptance issues. Moreover, similar to BASF, Bayer does not explicitly list the concerns nor do they directly address them. Instead, they either avoid mentioning the issue, or they make general statements about consumer acceptance without mentioning GMOs. Overall, the company engaged in stigma avoidance frequently, and even when stigma was mentioned, it was often brief and vague. The most common avoidance behavior for Bayer was *C: Concealment of Hostile Audiences' Viewpoints (11/16)*. Second most common was *A: Avoiding Mention of Existence of Stigma (9/16)*. Least common was *B: Escape Behaviors (0/16)* as the firm did not engage in escape behaviors. Overall, Bayer engaged in moderate avoidance of stigma (20/48).

The findings show BASF and Bayer use the most avoidance strategies. These are also the firms which have multiple category membership (diversified firms) and have global headquarters in Europe (location of higher stigma). This makes intuitive sense as these firms are

the ones which can get away with avoiding stigma (because they have multiple category membership), and they are also the firms which face the highest stigma (among multiple category membership firms), and therefore the highest motivation to avoid the stigma (among multiple category membership firms). BASF and Bayer are more inclined to want to avoid mentioning stigma because they are located in an area where stigma is the highest. In other words, they have the most to lose (compared to Dow and DuPont) by drawing attention to the fact that stigma exists.

(2) Quadrant 2: Dow and DuPont

Quadrant 2 includes Dow and DuPont. Dow was mixed when it came to avoidance of stigma. In certain years, the firm explicitly engaged in the topic of consumer acceptance issues, while in other years, the topic was vaguely mentioned or not explicitly mentioned. However, in 2009 and onwards the company made a conscious effort to acknowledge the existence of consumer concerns and scientific, philosophical and ethical implications of biotechnology. For instance, when the company partnered with GMO Answers.com, made an effort to help inform consumers. The most common avoidance strategy used by Dow was *C: Concealment of Hostile Audiences' Viewpoints (7/48)*. The second most common was *A: Avoiding Mention of Existence of Stigma (5/48)*. Overall, Dow engaged in low avoidance behavior (12/48).

As with Dow, signs of avoidance of stigma was moderate for DuPont. The company often mentioned the fact that there were acceptance issues with biotechnology but very rarely addressed GM specific concerns. DuPont has made statements claiming that the company's sales are impacted by market acceptance of GM technology over the years, and has admitted that acceptance of agricultural biotechnology products has been slower than anticipated. However, the company rarely lists the reasons why consumer acceptance of GM technology, instead DuPont lists the reasons why the public should accept the technology and makes efforts to convince the public of the benefits of this technology. The only avoidance strategy used by DuPont was *C: Concealment of Hostile Audiences' Viewpoints (14/48)*. Overall, DuPont engaged in low defiance behavior (14/48).

The findings show that Dow and DuPont, two firms facing the lowest stigma engage in less avoidance strategies than BASF and Bayer, however, they still use more avoidance than Monsanto and Syngenta. Multiple category firms in the U.S. do not avoid stigma as much as BASF and Bayer because they have less of a reason to hide the stigma. This is because stigma is less of an issue for them as their local audiences in the U.S. are less hostile. The assumption here is that even though Dow and DuPont face the lowest stigma of the Big Six, they still face

stigma. Dow and DuPont are located in areas of lower stigma; therefore, they have the least to lose from mentioning stigma and therefore exhibit less avoidance strategies. Next, the avoidance results for single category membership firms are discussed.

(3) Quadrant 3: Monsanto

Quadrant 3 consists of Monsanto. Signs of avoidance of stigma was low for Monsanto. Every year, statements were made about issues surrounding public acceptance. The reason why Monsanto is not able to avoid stigma is because they solely operate in a stigmatized industry, therefore, they have higher exposure to stigma. Only once in 2003, did Monsanto explicitly engage in a stigma escape behavior Monsanto is not able to avoid the stigma as they are a non-diversified firm who are not able to use an avoidance strategy whereby they focus on other business lines in order to divert attention away from the stigmatized activities. Monsanto addresses stigma in very direct ways. To summarize, Monsanto does not avoid stigma and has only once engaged in escape behaviors. Overall, Monsanto engaged in very low avoidance behaviors (1/48) with the following score: *B: Escape Behaviors (1/16)*.

(4) Quadrant 4: Syngenta

Quadrant 4 consists of Syngenta. As with Monsanto, Syngenta experiences very low avoidance of stigma due to their membership in only one stigmatized industry. As a single category membership firm in Europe, the firm has very high exposure to stigma, and therefore has no means to avoid it. Syngenta also addresses stigma in direct ways. Syngenta often and clearly described the fact that stigma was present in their industry. The company also mentions the reasons why people are against GM technology. To summarize, Syngenta engages in very low avoidance behaviors (2/48) obtaining the following scores: *A: Avoiding Mention of Existence of Stigma (1/16)* and *C: Concealment of Hostile Audiences' Viewpoints (1/16)*.

The findings of my cross-case analysis of BASF (Quadrant 1), Bayer (Quadrant 1), Dow (Quadrant 2), DuPont (Quadrant 2), Monsanto (Quadrant 3) and Syngenta (Quadrant 4) led me to the following proposition:

PROPOSITION 1

Firms with lowest exposure to stigma engage in more avoidance strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.

In other words, the four firms with the lowest exposure to stigma engaged in more avoidance strategies than the two firms with the highest exposure to stigma. The next passive strategic response discussed is the dilution strategy.

5.2.1.2 Dilution Strategy

In this section, the findings of the dilution strategy cross-case analysis are explained. Dilution is a second-order theme encompassing one first-order category; *D: Expectation Blurring*. See Table 61: *Dilution of Stigma Strategy Results I*, Figure 61: *Dilution of Stigma Strategy Results II* and Figure 62: *Dilution of Stigma Strategy Results III* for an overview of the results. An in-depth description follows.

Table 61: Dilution of Stigma Strategy Results I

	BASF	Bayer	Dow	DuPont	Monsanto	Syngenta
	D	D	D	D	D	D
2000	X	X	X	X	X	–
2001	X	X	X	X	–	–
2002	X	X	X	X	–	–
2003	X	X	X	X	–	–
2004	X	X	X	X	–	–
2005	X	X	X	X	–	–
2006	X	X	X	X	–	–
2007	X	X	X	X	–	–
2008	X	X	X	X	–	–
2009	X	X	X	X	–	–
2010	X	X	X	X	–	–
2011	X	X	X	X	–	–
2012	X	X	X	X	–	–
2013	X	X	X	X	–	–
2014	X	X	X	X	–	–
2015	X	X	X	X	–	–
SUM³⁰⁰	16	16	16	16	1	0
	16/16 = 100%	16/16 = 100%	16/16 = 100%	16/16 = 100%	1/16 = 6%	0/16 = 0%
Usage	Very High	Very High	Very High	Very High	Very Low	Very Low

Source: Own Elaboration

³⁰⁰ The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the score is converted to a percentage score. Percentages rounded to the nearest percentage.

Figure 61: Dilution of Stigma Strategy Results III³⁰¹

Lowest Exposure to Stigma		Very Low Dilution (0–20%)	Low Dilution (21–40%)	Moderate Dilution (41–60%)	High Dilution (61–80%)	Very High Dilution (81–100%)
↓	Dow					X
	DuPont					X
	BASF					X
	Bayer					X
Highest Exposure to Stigma	Monsanto	X				
	Syngenta	X				

Source: Own Elaboration

Table 62: Dilution of Stigma Strategy Results II

Firms	Quadrant	Exposure to Stigma	Use
Individual Firms			
Syngenta		1 st Highest Stigma Exposure ³⁰²	Very Low
Monsanto		2 nd Highest Stigma Exposure ³⁰³	Very Low
Bayer		3 rd Highest Stigma Exposure ³⁰⁴	Very High
BASF		4 th Highest Stigma Exposure ³⁰⁵	Very High
DuPont		5 th Highest Stigma Exposure ³⁰⁶	Very High
Dow		6 th Highest Stigma Exposure ³⁰⁷	Very High
Category Memberships			
Single Category Membership Firms	Quad 3 & 4	1 st and 2 nd Highest Stigma Exposure	Very Low
Multiple Category Membership Firms	Quad 1 & 2	3 rd , 4 th , 5 th , and 6 th Highest Stigma Exposure	Very High
Global Headquarters Location			
All E.U Firms	Quad 1 & 4	1 st , 3 rd and 4 th Highest Stigma Exposure	Very Low—Very High
All U.S. Firms	Quad 2 & 3	2 nd , 5 th , and 6 th Highest Stigma Exposure	Very Low—Very High
Quadrants			
Single Category Membership Firms + E.U Firm	Quad 4	1 st Highest Stigma Exposure	Very Low
Single Category Membership Firms + U.S. Firm	Quad 3	2 nd Highest Stigma Exposure	Very Low
Multiple Category Membership Firms + E.U Firm	Quad 1	3 rd and 4 th Highest Stigma Exposure	Very High
Multiple Category Membership Firms + U.S. Firm	Quad 2	5 th , and 6 th Highest Stigma Exposure	Very High

Source: Own Elaboration

³⁰¹ Results for percentage scores obtained for each company in the case presentation chapter.

³⁰² Results of Syngenta dilution demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).

³⁰³ Results of Monsanto dilution demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).

³⁰⁴ Results of Bayer dilution demonstrated in 4.1.2.4 Summary Description and Table (Bayer).

³⁰⁵ Results of BASF dilution demonstrated in 4.1.1.4 Summary Description and Table (BASF).

³⁰⁶ Results of DuPont dilution demonstrated in 4.2.2.4 Summary Description and Table (DuPont).

³⁰⁷ Results of Dow dilution demonstrated 4.2.1.4 Summary Description and Table (Dow).

(1) Quadrant 1: BASF and Bayer

Quadrant 1 encompasses BASF and Bayer. Throughout the years, BASF was very active in using dilution strategies. More specifically, the company consistently aligned their corporate strategy in a way that dilutes their association to the stigmatized industry. In other words, BASF's corporate strategy involved careful attention to avoid giving off the impression of being part of the stigmatized industry. For instance, BASF's corporate strategy is about creating chemistry for a sustainable future (BASF, 2017d). This is a vague and unspecific statement with no clear link to agriculture or agricultural biotechnology. At first glance, it is not clear that the company operates in the agricultural biotechnology segment. Over time, BASF demonstrated efforts to loosen their ties to the industry by confusing stakeholders. This is done in a way which bombards the public giving them so much information about the firm, that they don't retain the stigmatized industry in their head. This is done to give a halo effect impression whereby a stakeholder on first glance is led to believe that the firms' intentions are pure. These strategies have the aim of blurring stakeholder expectations of the firm by making vague statements about their activities. Year after year, similar statements are made. Overall, BASF engaged in very high *D: Expectation Blurring* (16/16). Consequently, the firm engaged in very high stigma dilution (16/16).

As with BASFs strategy, Bayer's corporate mission of "Science for a better life" is a very broad statement that blurs stakeholder expectations with the end result of diluting the stigma that they face. The company consistently claims to address global challenges with their products. Bayer's strategy involves tackling large societal problems on a global scale. Namely, those of healthcare and agriculture. Moreover, buzzwords, such as "global megatrends" were used in order to justify their activities. The company's strategy enables them to dilute stigma by blurring stakeholder expectations. Overall, Bayer engaged in very high *D: Expectation Blurring* (16/16). Consequently, the firm engaged in very high stigma dilution (16/16).

To summarize, BASF and Bayer are multiple category membership firms which are able to engage in avoidance behaviors, meaning they can reframe company activities in a way that is GMO non-specific, and in essence blurring stakeholder expectations of the firm.

(2) Quadrant 2: Dow and DuPont

Quadrant 2 encompasses Dow and DuPont. As with BASF, and Bayer, Dow used extensive stigma dilution strategies. Dow described its corporate strategy as "We use innovative chemical and biotechnology solutions to meet the food, feed, and fiber needs of the world" (Dow, 2011b, p. 85). The company engaged in dilution strategies in which their corporate strategy and/or

mission involves blurring stakeholder expectations. Dow puts forth the idea that the company's mission is to contribute positive changes to the world, and benefit mankind. The company has made lavish statements regarding their contribution to society, and claims to be providing for the global needs in society. The company attempts to disassociate themselves from the industry and make it seem at first glance, consumers' expectations of the firm are blurred. The company also uses buzzwords, such as "megatrends." Overall, Dow engaged in very high *D: Expectation Blurring* (16/16). Consequently, the firm engaged in very high stigma dilution (16/16).

As with the other diversified firms, throughout the years, DuPont was very active in using dilution strategies. More specifically, the company consistently aligned their corporate strategy in a way which dilutes their association to the stigmatized industry. At first glance, it is not clear that the company operates in the agricultural biotechnology segment. The company also makes claims to tackle global megatrends and makes lavish assertions about their activities and corporate purpose. Overall, DuPont engaged in very high *D: Expectation Blurring* (16/16). Consequently, the firm engaged in very high stigma dilution (16/16).

To summarize, as with BASF and Bayer, Dow and DuPont use extensive stigma dilution strategies. The dilution effect explains why firms with multiple categories are able to dilute the stigma they face by bringing their other businesses into the spotlight and trying to conceal the stigmatized business. Single membership category firms can't do that.

(3) Quadrant 3: Monsanto

Quadrant 3 consists of Monsanto. Stigma dilution was not a strategy that was used by Monsanto. This is primarily because Monsanto does not have the ability to dilute stigma. When Monsanto describes its activities, shielding themselves from controversy by downplaying their role in agricultural biotechnology is not possible. To summarize, dilution was not something that Monsanto was able to do in response to stigma. Overall, Monsanto engaged in very low *D: Expectation Blurring* (1/16). The firm only engaged in dilution for one year out of 15. Consequently, the firm engaged in very low stigma dilution (1/16).

(4) Quadrant 4: Syngenta

Quadrant 4 consists of Syngenta. Stigma dilution was not a strategy that was used by Syngenta. When Syngenta describes its activities, shielding themselves from controversy by downplaying their role in agricultural biotechnology was not possible. For firms which operate in both stigmatized and non-stigmatized industries, they have an ability to dilute stigma. In contrast,

firms that only operate in stigmatized industries don't have that opportunity. Monsanto and Syngenta are firms that did not divest their assets in the face of organizational stigma, when it seemed like this would help to ensure their firms' survival. Overall, Syngenta engaged in very low *D: Expectation Blurring* (0/16). Consequently, the firm engaged in very low stigma dilution (0/16).

The findings of my cross-case analysis of BASF (Quadrant 1), Bayer (Quadrant 1), Dow (Quadrant 2), DuPont (Quadrant 2), Monsanto (Quadrant 3) and Syngenta (Quadrant 4) led me to the following proposition:

PROPOSITION 2 ***Firms with lowest exposure to stigma engage in more dilution strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.***

In other words, the four firms with the lowest exposure to stigma engaged in more dilution strategies than the two firms with the highest exposure to stigma. Next, the results for the overall theoretical dimension passive strategic responses are discussed.

5.2.1.3 Overall Passive Strategies

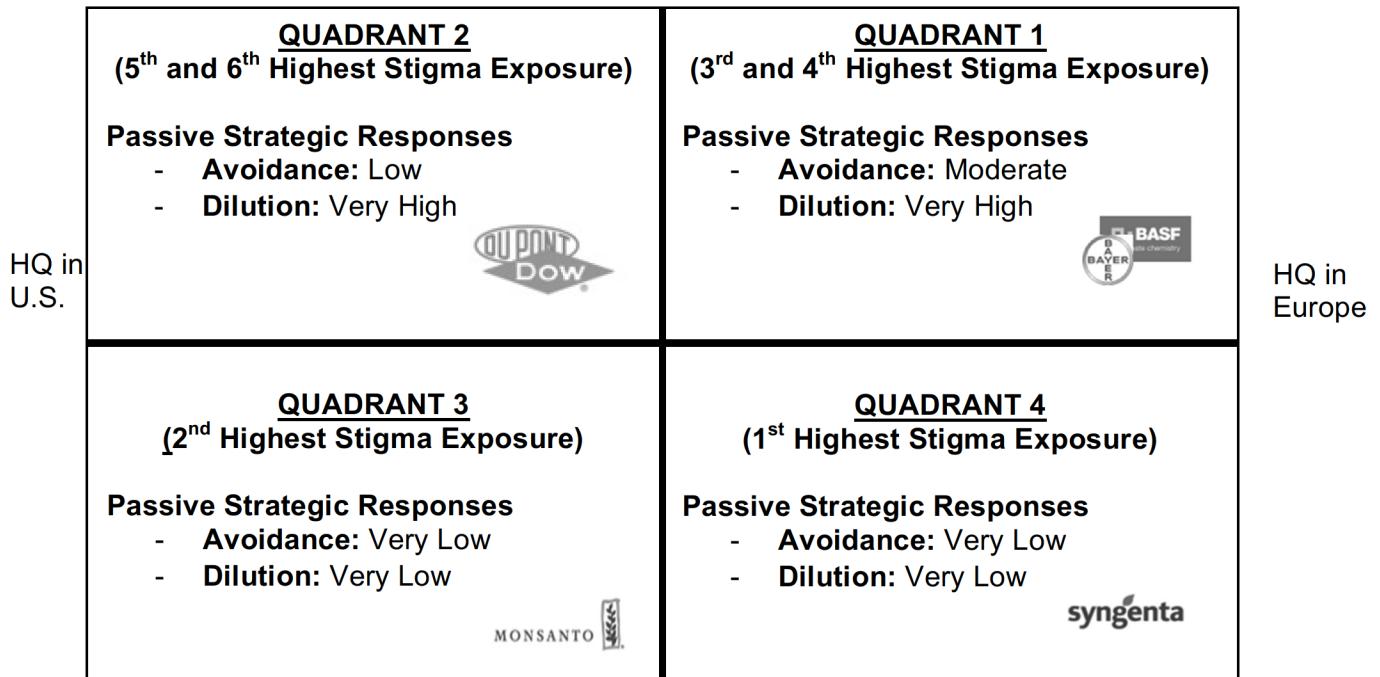
Multiple category membership firms engage in stigma reduction strategies on the firm-level. What this means is they target reducing stigma on a firm-level and not on an industry-level. This is because firms who straddle multiple categories want to disassociate themselves with the industry, and engaging in stigma elimination on an industry-level would strengthen their association with the stigmatized industry. The use of an avoidance strategy to stigma was determined to be higher for multiple category membership firms. See *Figure 61: Overall Passive Strategy I* and *Figure 62: Overall Passive Strategy II*. The cross-case results for the passive strategic responses to stigma (avoidance + dilution) allow me to put for the following proposition:

PROPOSITION 3 ***Firms with lowest exposure to stigma engage in more passive strategic responses when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.***

In other words, the four firms with the lowest exposure to stigma engaged in more passive strategies than the two firms with the highest exposure to stigma. See *Figure 62: Overall Passive Strategy I* and *Figure 63: Overall Passive Strategy II*.

Figure 62: Overall Passive Strategy I³⁰⁸

Multiple Category Membership
(Diversified Firms)



(Non-Diversified Firms
Single Category Membership

Source: Own Elaboration

As Figure 62 *Overall Passive Strategy II* shows, both single category membership firms (Monsanto and Syngenta) engage in very low passive strategies. In other words, both firms score very low for both second-order themes: avoidance and dilution. Conversely, multiple category membership firms all score higher than very low on both second-order themes.

Figure 63: Overall Passive Strategy II

Lowest Exposure to Stigma ↓ Highest Exposure to Stigma		Very Low Passive Strategies		Low Passive Strategies		Moderate Passive Strategies		High Passive Strategies		Very High Passive Strategies	
		A ³⁰⁹	DI ³¹⁰	A	DI	A	DI	A	DI	A	DI
	Dow				X						X
	DuPont				X						X
	BASF						X				X
	Bayer						X				X
	Monsanto	X	X								
	Syngenta	X	X								

Source: Own Elaboration

³⁰⁸ Logos obtained from corporate websites.

³⁰⁹ A stands for Avoidance

³¹⁰ DI stands for Dilution

5.2.2 Active Strategic Responses

5.2.2.1 Defiance of Stigma

In the following section, the findings for the defiance strategy cross-case analysis are explained. Defiance is a second-order theme encompassing three first-order categories; E: Defiance against those who are against GMOs; F: Critical of legislation and/or regulations about GMOs; G Critical of GMO labeling. See *Table 63: Defiance of Stigma Strategy Results I*, *Figure 64: Defiance of Stigma Strategy Results II*, and *Table 64: Defiance of Stigma Strategy Results III*. An in-depth description follows.

Table 63: Defiance of Stigma Strategy Results I

	BASF			Bayer			Dow			DuPont			Monsanto			Syngenta		
	E	F	G	E	F	G	E	F	G	E	F	G	E	F	G	E	F	G
2000	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–
2001	X	X	–	–	–	–	–	–	–	–	–	–	X	X	–	–	–	–
2002	–	–	–	–	X	–	–	–	–	–	–	–	X	X	–	X	–	–
2003	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	X	X	–
2004	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	X	X	–
2005	–	X	–	–	X	–	–	–	–	–	–	–	–	–	–	X	X	–
2006	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–
2007	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–
2008	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–
2009	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	X	X	–
2010	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–
2011	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–	–	X	–
2012	–	–	–	–	–	–	–	–	–	–	–	–	X	X	X	–	X	–
2013	–	–	–	X	–	–	–	–	X	–	–	–	X	X	–	X	X	–
2014	–	–	–	X	X	–	–	–	–	–	–	–	X	X	X	–	X	–
2015	–	–	–	X	X	–	–	–	–	–	–	–	X	X	X	X	X	–
SUM ³¹¹	1	2	0	3	6	0	0	0	1	0	0	0	13	13	3	7	13	0
	3/48 = 6%			9/48 = 19%			1/48 = 2%			0/48 = 0%			29/48 = 61%			20/48 = 42%		
Usage	Very Low			Very Low			Very Low			Very Low			High			Moderate		

Source: Own Elaboration

³¹¹ The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.

Figure 64: Defiance of Stigma Strategy Results II³¹²

<p>Lowest Exposure to Stigma</p> <p>↓</p> <p>Highest Exposure to Stigma</p>		Very Low Defiance (0–20%)	Low Defiance (21–40%)	Moderate Defiance (41–60%)	High Defiance (61–80%)	Very High Defiance (81–100%)
	Dow	X				
	DuPont	X				
	BASF	X				
	Bayer	X				
	Monsanto				X	
	Syngenta			X		

Source: Own Elaboration

Table 64: Defiance of Stigma Strategy Results III

Firms	Quadrant	Exposure to Stigma	Use
Individual Firms			
Syngenta		1 st Highest Stigma Exposure ³¹³	Moderate
Monsanto		2 nd Highest Stigma Exposure ³¹⁴	High
Bayer		3 rd Highest Stigma Exposure ³¹⁵	Very Low
BASF		4 th Highest Stigma Exposure ³¹⁶	Very Low
DuPont		5 th Highest Stigma Exposure ³¹⁷	Very Low
Dow		6 th Highest Stigma Exposure ³¹⁸	Very Low
Category Memberships			
Single Category Membership Firms	Quad 3 & 4	1 st and 2 nd Highest Stigma Exposure	Moderate—High
Multiple Category Membership Firms	Quad 1 & 2	3 rd , 4 th , 5 th , and 6 th Highest Stigma Exposure	Very Low
Global Headquarters Location			
All E.U Firms	Quad 1 & 4	1 st , 3 rd and 4 th Highest Stigma Exposure	Very Low—Moderate
All U.S. Firms	Quad 2 & 3	2 nd , 5 th , and 6 th Highest Stigma Exposure	Very Low—High
Quadrants			
Single Category Membership Firms + E.U Firm	Quad 4	1 st Highest Stigma Exposure	Moderate
Single Category Membership Firms + U.S. Firm	Quad 3	2 nd Highest Stigma Exposure	High
Multiple Category Membership Firms + E.U Firm	Quad 1	3 rd and 4 th Highest Stigma Exposure	Very Low
Multiple Category Membership Firms + U.S. Firm	Quad 2	5 th , and 6 th Highest Stigma Exposure	Very Low

Source: Own Elaboration

³¹² Results for percentage scores obtained for each company in the case presentation chapter.

³¹³ Results of Syngenta defiance demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).

³¹⁴ Results of Monsanto defiance demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).

³¹⁵ Results of Bayer defiance demonstrated in 4.1.2.4 Summary Description and Table (Bayer).

³¹⁶ Results of BASF defiance demonstrated in 4.1.1.4 Summary Description and Table (BASF).

³¹⁷ Results of DuPont defiance demonstrated in 4.2.2.4 Summary Description and Table (DuPont).

³¹⁸ Results of Dow defiance demonstrated 4.2.1.4 Summary Description and Table (Dow).

(1) Quadrant 1: BASF and Bayer

BASF used defiance very sparingly. It was clear the company did not want to seem defensive and argumentative when it came to public perception of agricultural biotechnology. By not being argumentative, they are better able to shield themselves from the industry and ensure that attention is not drawn to their stigmatized activities. Instead they try to change opinion by addressing concerns in an indirect, more passive manner. The only defiance tactic found in the data was from 2001, when BASF made statements about legislations regarding GMOs. However, the firm often made statements about GMOs in a very subtly defiant way. The company did not outright use language that sounded defensive on the surface. The only defiance strategies used by BASF were E: *Defiance against those who are against GMOs (1/16)* and F: *Critical of legislation and/or regulations about GMOs (2/16)*; albeit, very infrequently. Overall, BASF engaged in very low defiance behavior (3/48).

As with BASF, Bayer did not want to seem defensive and confrontational when it came to GMOs. The firm instead tried to change opinion by primarily addressing concerns in an indirect, more submissive manner. Bayer tried to shield itself from stigma, therefore, drawing attention to critical stakeholders was not something that the company wanted to do. That being said, Bayer still engaged in defiance tactics. A defiance tactic that the company used most often was actively defending themselves in lawsuits. Besides taking legal action, the company has also made defensive statements. Moreover, Bayer has openly stated it disagrees with public policy in the European Union and has made statements about regulations for GMOs being inappropriate. The most frequent used defiance tactic by Bayer was and F: *Critical of legislation and/or regulations about GMOs (6/16)*, followed by E: *Defiance against those who are against GMOs (3/16)*. Overall, Bayer (9/48) and BASF (3/48) both engaged in very low defiance behavior. This makes intuitive sense as multiple category membership firms try to dilute their membership in stigmatized firms. BASF and Bayer both do not want to draw attention to their stigmatized industry and therefore, engage in low defiance in an effort to conceal their association as best they can.

(1) Quadrant 2: Dow and DuPont

Dow used the defiance tactic in a very subtle way. This shows Dow did not want to seem defensive and argumentative when it came to public perception of GMOs. The company instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. For instance, in 2013, the company listed the Coalition Against the Deceptive Food Labeling Scheme as an organization in which they take part. However, no explicit mention of the company's

position on food labeling was made in the documents examined. In other words, the company did not discuss in-depth how they felt about this issue. It was briefly listed alongside other organizations in which they take part. Given the company's strategy of diluting stigma, the fact that they use little defiance tactics make strategic sense. Using defiance strategies would bring attention to their stigmatized activities and thus prevent the firm from shielding themselves from stigma. Defiance tactics were only identified once in 2013, when the company was *G: Critical of GMO labeling (1/16)*. Overall, Dow engaged in very low defiance behavior.

DuPont did not use defiance behaviors. As with BASF, Bayer and Dow, DuPont did not want to seem defensive and argumentative when it came to public perception. Similarly, the firm instead tried to change opinion by primarily addressing concerns in an indirect, more passive manner. When DuPont discusses regulations surrounding agricultural biotechnology, the tone is negative, however, it is not flat out defiance. Given the company's strategy of diluting stigma, the fact that they use little defiance tactics make strategic sense. Using defiance strategies would bring attention to their stigmatized activities and thus prevent the firm from shielding themselves from stigma.

(2) Quadrant 3: Monsanto

Monsanto engages in high defiance in response to stigma. More precisely, the firm engages in defensive actions and statements when it comes to dealing with stigma. On a couple of occasions, the company denied that consumer acceptance issues existed, and made exaggerated statements about the improvement of stigma. The company has also illustrated very defensive behavior when it comes to safety concerns of stakeholders. Moreover, in regards to food labeling, the company has made comments which can be described as defensive. Monsanto has also claimed the public is not well educated about science, which is the reason for their skepticism regarding the technology. Monsanto has also stated regulatory systems are not appropriately funded, and take too long to approve products, which dampens innovation. Additionally, Monsanto has claimed that customers who face problems with their products are due to them not following customer purchase agreements. Moreover, the firm often states lawsuits against the company are unjust. The company has also made statements about their disagreement with researchers who have shown that some of their products may be unsafe. Moreover, over the years, contradictory statements about their opinions on food labeling can be found. On the one hand, they state consumers should be able to freely choose what products to consume. In contrast, they oppose labeling of products that have shown to be safe, which according to the company, is all of their products. The company also makes very defensive

statements about people who do not accept GM technology by saying such claims do not have scientific basis. Monsanto engaged in all forms of defiance. The most frequent defiance strategies used by Monsanto were E: *Defiance against those who are against GMOs (13/16)* and F: *Critical of legislation and/or regulations about GMOs (13/16)*, followed by G: *Critical of GMO labeling (3/16)*. Overall, Monsanto engaged in high defiance (29/48).

(3) Quadrant 4: Syngenta

Similar to Monsanto, Syngenta engages in high defiance in response to stigma. Syngenta engaged in quite extensive defiance behavior. An example is when the company criticized those against GM technology. Moreover, the company made a statement claiming that those who are against GM technologies are uninformed. In addition, the company has also contested lawsuits and openly challenged governments and regulations. For instance, Syngenta challenged the EU's partial moratorium on thiamethoxam³¹⁹. The company also makes claims the European Union's actions are based on political pressure instead of scientific evidence, effectively, discrediting their decision. As well, the firm also actively discredits concerns raised by stakeholders. Moreover, Syngenta has made critical statements regarding regulations imposed by the European Union. Another example of the company exhibiting defiance is from 2015 when the company states that the EU's ban on neonicotinoid seeds harms farmers. The most frequent defiance strategy used by Syngenta were E: *Defiance against those who are against GMOs (7/16)* and F: *Critical of legislation and/or regulations about GMOs (13/16)*. Overall, Syngenta engaged in moderate defiance (20/48).

The findings of my cross-case analysis of BASF (Quadrant 1), Bayer (Quadrant 1), Dow and (Quadrant 2), DuPont (Quadrant 2), Monsanto (Quadrant 3) and Syngenta (Quadrant 4) led me to the following proposition:

PROPOSITION 4 ***Firms with lowest exposure to stigma engage in less defiance strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.***

The next strategic response discussed is manipulation.

³¹⁹ Thiamethoxam is a "broad-spectrum insecticide that effectively controls insects. It is synthetic in origin, being a second-generation neonicotinoid compound belonging to the chemical subclass the thianicotinyls" (AgChem, 2017)

5.2.2.2 Manipulation of Stigma

In the following section, the findings of the manipulation strategy cross-case analysis are explained. Manipulation is a second-order themes encompassing six first-order categories: H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions of consumers; K: Use of anecdotal evidence/storytelling; L: Use of Fear Tactics; M: Membership in Agribiotechnology Industry Associations. See *Figure 65: Manipulation of Stigma Strategy Results I*, *Table 65: Manipulation of Stigma Strategy Results II*, and *Table 66: Manipulation of Stigma Strategy Results III* for an overview of the results. An in-depth description follows.

Figure 65: Manipulation of Stigma Strategy I³²⁰

<p>Lowest Exposure to Stigma</p> <p>↓</p> <p>Highest Exposure to Stigma</p>		Very Low Manip. (0-20 %)	Low Manip. (21-40 %)	Moderate Manip. (41-60 %)	High Manip. (61-80 %)	Very High Manip. (81-100 %)
	Dow		X			
	DuPont		X			
	BASF			X		
	Bayer				X	
	Monsanto				X	
	Syngenta					X

Source: Own Elaboration

³²⁰ Results for percentage scores obtained for each company in the case presentation chapter.

Table 65: Manipulation of Stigma Strategy II³²¹

	BASF					Bayer					Dow					DuPont					Monsanto					Syngenta				
	H	I	J	K	L	M	H	I	J	K	L	M	H	I	J	K	L	M	H	I	J	K	L	M	H	I	J	K	L	M
2000	-	X	X	-	X	-	-	-	-	X	-	-	-	-	-	-	X	-	-	X	X	X	X	-	X	-	-	-	-	X
2001	X	X	-	-	X	X	-	-	-	-	-	-	-	-	-	X	-	-	-	X	X	-	X	X	X	X	X	-	X	-
2002	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	X	X	-	X	X	X	X	-	X	X	-
2003	-	-	-	-	X	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-	X	X	X	X	-	X	X	X	X	X
2004	-	X	X	X	X	X	X	X	-	-	X	X	-	-	-	X	-	-	-	X	X	X	X	-	X	X	X	X	X	X
2005	-	X	X	-	X	-	X	X	-	X	X	X	-	-	-	X	-	-	-	X	X	X	X	-	X	X	X	X	X	X
2006	-	X	-	X	X	-	X	X	-	-	X	-	-	-	-	-	-	-	-	X	X	X	X	-	X	X	-	X	X	X
2007	-	X	-	-	X	-	X	X	-	X	X	X	-	-	-	X	-	-	-	X	X	-	X	X	-	X	X	-	X	X
2008	-	X	-	-	X	-	X	X	-	X	X	X	-	-	-	X	-	-	-	X	X	X	X	-	X	X	-	X	X	X
2009	-	X	-	-	X	-	X	X	X	X	X	X	-	-	-	X	-	-	-	X	X	-	X	X	-	X	X	-	X	X
2010	X	X	-	-	X	-	X	X	X	X	X	X	-	-	-	X	-	-	-	X	X	X	X	-	X	X	-	X	X	X
2011	X	X	-	-	X	-	X	X	X	X	X	X	-	-	-	X	X	-	-	X	X	X	X	-	X	X	-	X	X	X
2012	X	X	-	-	X	X	X	X	X	X	X	X	-	-	-	X	-	X	-	X	X	X	X	-	X	X	-	X	X	X
2013	-	X	-	-	X	X	X	X	X	X	X	X	-	-	-	X	X	X	-	X	X	X	X	-	X	X	X	X	X	X
2014	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	X	-	-	X	X	X	X	X	X	X	X	X	X	X
2015	X	X	-	-	X	X	X	X	X	X	X	X	X	-	-	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X
SUM	7	1	3	3	1	6	1	1	7	1	1	1	2	4	0	1	3	5	0	0	1	4	1	5	1	1	1	1	1	1
	48/96 = 50%					66/96 = 69%					23/96 = 24%					25/96 = 26%					76/96 = 79%					80/96 = 83%				
Usage	Moderate					High					Low					Low					High					Very High				

Source: Own Elaboration

³²¹ The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage point.

Table 66: Manipulation of Stigma Strategy III

Firms	Quadrant	Exposure to Stigma	Use
Individual Firms			
Syngenta		1 st Highest Stigma Exposure ³²²	Very High
Monsanto		2 nd Highest Stigma Exposure ³²³	High
Bayer		3 rd Highest Stigma Exposure ³²⁴	High
BASF		4 th Highest Stigma Exposure ³²⁵	Moderate
DuPont		5 th Highest Stigma Exposure ³²⁶	Low
Dow		6 th Highest Stigma Exposure ³²⁷	Low
Category Memberships			
Single Category Membership Firms	Quad 3 & 4	1 st and 2 nd Highest Stigma Exposure	High — Very High
Multiple Category Membership Firms	Quad 1 & 2	3 rd , 4 th , 5 th , and 6 th Highest Stigma Exposure	Low—High
Global Headquarters Location			
All E.U Firms	Quad 1 & 4	1 st , 3 rd and 4 th Highest Stigma Exposure	Moderate—Very High
All U.S. Firms	Quad 2 & 3	2 nd , 5 th , and 6 th Highest Stigma Exposure	Low—High
Quadrants			
Single Category Membership Firms + E.U Firm	Quad 4	1 st Highest Stigma Exposure	Very High
Single Category Membership Firms + U.S. Firm	Quad 3	2 nd Highest Stigma Exposure	High
Multiple Category Membership Firms + E.U Firm	Quad 1	3 rd and 4 th Highest Stigma Exposure	Moderate—High
Multiple Category Membership Firms + U.S. Firm	Quad 2	5 th , and 6 th Highest Stigma Exposure	Low

Source: Own Elaboration

(1) Quadrant 1: BASF and Bayer

Different types of manipulation tactics were used by BASF over the years. First, the company made statements about being politically active, and involved with governments in order to create or change policy regarding global seed and agrochemical or chemical legislation. The company also mentioned intent to manipulate perception by engaging politically, but also by being involved in the educational system. Moreover, BASF has stated very clearly it believes in being active in politics in order to help legislation move in their favor. The company also uses fear tactics in order to convince skeptical consumers and investors about their GMO products. BASF engages

³²² Results of Syngenta manipulation demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).

³²³ Results of Monsanto manipulation demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).

³²⁴ Results of Bayer manipulation demonstrated in 4.1.2.4 Summary Description and Table (Bayer).

³²⁵ Results of BASF manipulation demonstrated in 4.1.1.4 Summary Description and Table (BASF).

³²⁶ Results of DuPont manipulation demonstrated in 4.2.2.4 Summary Description and Table (DuPont).

³²⁷ Results of Dow manipulation demonstrated 4.2.1.4 Summary Description and Table (Dow).

in manipulation by taking part in agricultural biotechnology industry associations. The company also uses storytelling and anecdotal evidence from farmers in order to persuade public perception. More precisely, their annual reports and corporate social responsibility reports include stories of farmers who have benefited from their products. The company provides training for farmers. Providing training to farmers is a manipulation strategy as the aim of the training is to increase the use of their products, and may not include information which is in the best interest of the farmers. The company has also made explicit statements about intent to change consumer perception. The most frequently used manipulation technique by BASF includes *I: Political advocacy/lobbying* (13/16) and *L: Use of Fear Tactics* (16/16). Overall BASF uses moderate manipulation strategies (48/96).

Bayer has stated it believes it has a duty to shape political opinion on legislation which may affect the company's operations. Moreover, the company has said that it has engaged in political lobbying that focuses on acceptance of biotechnology. The company has mentioned the importance of gaining input from political players: Moreover, the company works with organizations such as European Crop Protection Association and the German Agrochemical Industrial Association. The company also frequently uses fear tactics in order to gain public approval. Moreover, the firm has affirmed its commitment to training farmers on agricultural methods and uses anecdotal evidence and storytelling to persuade consumers. The most frequently used manipulation technique by Bayer is *L: Use of Fear Tactics* (13/16), followed by *H: Providing education/training* (12/16) and *I: Political advocacy/lobbying* (12/16). Overall, Bayer uses High manipulation strategies (66/96).

(2) Quadrant 2: Dow and DuPont

Dow has made very general statements about being politically active, without drawing attention to stigma. For example, the statements the company made were very broad and didn't bring attention to any particular industry, product or actions. Despite making vague statements, occasionally the firm made statements specific to the stigmatized industry. Moreover, in 2009, the company said it worked together with Australian policy experts in order to create politically viable solutions for food. Dow mentions "food" but the statement is still vague and not specific to agricultural biotechnology. The company also uses fear tactics in order to manipulate consumer perception of GMOs. The company emphasizes the growing world population and the need to come up with innovative solutions in order to ensure adequate food supplies. Moreover, the firm also engages in international industry associations as a form of manipulation. The company also

used anecdotal evidence from farmers. The most frequently used manipulation strategy by Dow include *L: Use of Fear Tactics (13/16)*. However, overall Dow engages in low manipulation behaviors (23/96).

DuPont has made statements regarding their intent to build alliances with governments, policy makers and advocacy groups, which demonstrates their manipulation strategy. The company has explicitly stated the importance of extending and broadening their relationships with thought leaders. The company has also made a commitment to work with scientists, students and educators. In addition to making explicit statements about intent to influence public knowledge and opinion on plant biotechnology, the firm has also made broader statements about the role of DuPont in society. DuPont openly claims to collaborate with government institutions. The company has also made claims it trains farmers on agricultural methods. The company uses fear tactics as a manipulation strategy. This is done in order to help make people believe that the company's products are necessary in order to feed the world. The most frequently used manipulation strategy by Dow include *L: Use of Fear Tactics (14/16)*. Overall, DuPont engages in low manipulation behaviors (25/96).

(3) Quadrant 3: Monsanto

The findings show that Monsanto engages in high manipulation behaviors. For instance, in 2000, Monsanto laid out a biotechnology acceptance strategy in hopes of changing the minds of consumers. Monsanto has also admitted to manipulating consumer perception via education programs. Monsanto collaborates with educators to get them on their side. Moreover, the firm has claimed on many occasions that it believes in being politically active in order to serve their interests and has also admitted to bringing stakeholders into their facilities, which can be seen as a method of manipulation. Moreover in 2003, the company openly admitted to having a European Commercial Acceptance team, whereby they try to influence consumer perception. Monsanto also uses anecdotal evidence/storytelling in order to convince stakeholders of the advantages of their products. In addition to the above-mentioned tactics, Monsanto also engages in the use of fear tactics in order to manipulate stigma. The most frequently used manipulation strategies by Monsanto include *I: Political advocacy/lobbying (16/16)*; *K: Use of anecdotal evidence/storytelling (16/16)*; *L: Use of Fear Tactics (16/16)*. To summarize, Monsanto uses high manipulation techniques on an ongoing basis in order to change consumer perception (76/96).

(4) Quadrant 4: Syngenta

The findings show Syngenta engages in very high manipulation behaviors. Syngenta engages in manipulation often and frequently. The firm uses a variety of strategies in order to manipulate the perception of stigma on both a firm-level and on an industry-level. Syngenta is critical of the regulatory requirements imposed on GM technologies, and engages in political advocacy. In addition, the firm has engaged in training for farmers in order to promote their products. Syngenta has also admitted to manipulating the minds of schoolchildren when it comes to agrochemicals. As well, the company has admitted to participating in debates at the World Economic Forum. The firm has admitted to intent to change consumer perception. Syngenta also uses storytelling and anecdotal evidence in order to convince stakeholders of GM legitimacy. Moreover, fear tactics are used in order to manipulate stigma. The most frequently used manipulation strategies used by Syngenta include *H: Providing education/training (16/16)*, and *L: Use of Fear Tactics (16/16)*. To summarize, Syngenta uses very high manipulation techniques on an ongoing basis in order to change consumer perception (80/96).

The findings of my cross-case analysis of BASF (Quadrant 1), Bayer (Quadrant 1), Dow (Quadrant 2), DuPont (Quadrant 2), Monsanto (Quadrant 3) and Syngenta (Quadrant 4) led me to the following proposition:

PROPOSITION 5 *Firms with lowest exposure to stigma engage in less manipulation strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.*

The next strategic response discussed is destigmatization.

5.2.2.3 Destigmatization

In the following section, the result of the Destigmatization strategy cross-case analysis is explained. Destigmatization is a second-order theme encompassing one first-order category; N: Sustainable Agriculture. See *Table 67: Destigmatization of Stigma Strategy Results I*, *Figure 66: Destigmatization of Stigma Strategy Results II*, and *Table 68: Destigmatization of Stigma Strategy Results III*. Destigmatization behavior included statements which were made with the aim of reframing the agricultural biotechnology activities in terms of sustainable agriculture. In other words, destigmatization behavior was found when the firm made arguments that stated that GM technology was a necessary tool to ensure sustainable agriculture to feed a growing population.

Table 67: Destigmatization of Stigma Strategy Results I

	BASF	Bayer	Dow	DuPont	Monsanto	Syngenta
	N	N	N	N	N	N
2000	X	–	–	–	X	X
2001	X	–	–	–	X	X
2002	X	–	–	–	X	X
2003	X	–	–	–	X	X
2004	X	X	–	X	X	X
2005	X	X	–	X	X	X
2006	X	X	–	X	X	X
2007	X	X	–	X	X	X
2008	X	X	–	–	X	X
2009	X	X	–	–	X	X
2010	X	X	X	–	X	X
2011	X	X	X	X	X	X
2012	X	X	X	X	X	X
2013	X	X	X	X	X	X
2014	X	X	X	–	X	X
2015	X	X	X	–	X	X
SUM ³²⁸	16	12	6	7	16	16
	16/16 = 100%	12/16 = 75%	6/16 = 38%	7/16 = 44%	16/16 = 100%	16/16 = 100%
Usage	Very High	High	Low	Moderate	Very High	Very High

Source: Own Elaboration

Figure 66: Destigmatization of Stigma Strategy Results II³²⁹

Lowest Exposure to Stigma ↓ Highest Exposure to Stigma		Very Low Destigma. (0–20%)	Low Destigma. (21–40%)	Moderate Destigma. (41–60%)	High Destigma. (61–80%)	Very High Destigma. (81–100%)
	Dow		X			
	DuPont			X		
	BASF					X
	Bayer				X	
	Monsanto					X
	Syngenta					X

Source: Own Elaboration

³²⁸ The total score for each column is tallied (1 point for every (X) and 0 points for every (-). Following this, the total score for each strategy is tallied. This score is then converted to a percentage score for each strategic response to stigma. Percentages rounded to the nearest percentage.

³²⁹ Results for percentage scores obtained for each company in the case presentation chapter.

Table 68: Destigmatization of Stigma Strategy Results III

Firms	Quadrant	Exposure to Stigma	Use
Individual Firms			
Syngenta		1 st Highest Stigma Exposure ³³⁰	Very High
Monsanto		2 nd Highest Stigma Exposure ³³¹	Very High
Bayer		3 rd Highest Stigma Exposure ³³²	High
BASF		4 th Highest Stigma Exposure ³³³	Very High
DuPont		5 th Highest Stigma Exposure ³³⁴	Moderate
Dow		6 th Highest Stigma Exposure ³³⁵	Low
Category Memberships			
Single Category Membership Firms	Quad 3 & 4	1 st and 2 nd Highest Stigma Exposure	Very High
Multiple Category Membership Firms	Quad 1 & 2	3 rd , 4 th , 5 th , and 6 th Highest Stigma Exposure	Low—Very High
Global Headquarters Location			
All E.U. Firms	Quad 1 & 4	1 st , 3 rd and 4 th Highest Stigma Exposure	High—Very High
All U.S. Firms	Quad 2 & 3	2 nd , 5 th , and 6 th Highest Stigma Exposure	Low—Very High
Quadrants			
Single Category Membership Firms + E.U. Firm	Quad 4	1 st Highest Stigma Exposure	Very High
Single Category Membership Firms + U.S. Firm	Quad 3	2 nd Highest Stigma Exposure	Very High
Multiple Category Membership Firms + E.U. Firm	Quad 1	3 rd and 4 th Highest Stigma Exposure	High—Very High
Multiple Category Membership Firms + U.S. Firm	Quad 2	5 th , and 6 th Highest Stigma Exposure	Low—Moderate

Source: Own Elaboration

(1) Quadrant 1: BASF and Bayer

The findings show that BASF and Bayer scored high to very high for destigmatization behaviors. BASF consistently attempted at industry destigmatization strategies. In other words, efforts to reframe the industry were found frequently and often. Destigmatization differs from fear tactics because it entitles reframing the industry without trying to instill fear, or manipulate

³³⁰ Results of Syngenta destigmatization demonstrated in 4.4.1.4 Summary Description and Table (Syngenta).

³³¹ Results of Monsanto destigmatization demonstrated in 4.3.1.4 Summary Description and Table (Monsanto).

³³² Results of Bayer destigmatization demonstrated in 4.1.2.4 Summary Description and Table (Bayer).

³³³ Results of BASF destigmatization demonstrated in 4.1.1.4 Summary Description and Table (BASF).

³³⁴ Results of DuPont destigmatization demonstrated in 4.2.2.4 Summary Description and Table (DuPont).

³³⁵ Results of Dow destigmatization demonstrated 4.2.1.4 Summary Description and Table (Dow).

investors. BASF and Bayer both refer to their GMO activities as sustainable agriculture initiatives. They refer to their activities in the seed and agrochemicals business. They did this in order to reframe the ways investors see the industry as a whole. Overall, BASF engages in very high destigmatization (16/16) and Bayer engages in high destigmatization (12/16).

(2) Quadrant 2: Dow and DuPont

In terms of destigmatization efforts, Dow only began engaging sustainable agriculture industry reframing in 2010 onwards. However, since then, the company did use this tactic every year. DuPont tried to reframe the industry in terms of sustainable agriculture. However, their efforts were inconsistently used. The findings show Dow and DuPont scored low to moderate for destigmatization behaviors. This means the firms did not very often engage in industry destigmatization strategy. Dow engages in low destigmatization (6/16), and DuPont engages in moderate destigmatization (7/16).

(3) Quadrant 3: Monsanto

The findings show Monsanto engaged in very high destigmatization behaviors. Monsanto uses extensive destigmatization techniques. The company reframes the industry in terms of sustainable agriculture on a consistent basis over the years. Overall, Monsanto engages in very high destigmatization (16/16).

(4) Quadrant 4: Syngenta

As with Monsanto, the findings show that Syngenta engaged in very high destigmatization behaviors. Syngenta uses extensive destigmatization techniques by reframing the industry in terms of sustainable agriculture on an ongoing and consistent basis over the years. Overall, Syngenta engages in very high destigmatization (16/16) indicating a very strong motivation to move the industry from a state of stigma to one of legitimacy.

The findings of my cross-case analysis of BASF (Quadrant 1), Bayer (Quadrant 1), Dow (Quadrant 2), DuPont (Quadrant 2), Monsanto (Quadrant 3) and Syngenta (Quadrant 4) led me to the following proposition:

PROPOSITION 6

Firms with lowest exposure to stigma engage in less destigmatization strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.

See Table 66: Destigmatization of Stigma Strategy Results I, Figure 65: Destigmatization of Stigma Strategy Results II, and Table 67: Destigmatization of Stigma Strategy Results III. Next, the results for the overall theoretical dimension of active strategic responses are discussed.

5.2.2.4 Overall Active Strategies

Multiple category membership firms engage in stigma reduction strategies on an industry-level. What this means is they target reducing stigma on an industry-level not on a firm-level. This is because firms who have single category membership are not able to disassociate themselves with the industry, and therefore engaging in stigma reduction strategies on an industry-level is necessary as they are not able to use passive strategies. The use of a defiance, manipulation, and destigmatization behaviors were found to be higher for firms with higher exposure to stigma. See Figure 67: Overall Active Strategy I and Figure 68: Overall Active Strategy II.

Figure 67: Overall Active Strategy I

Lowest Exposure to Stigma ↓ Highest Exposure to Stigma		Very Low Active Strategies			Low Active Strategies			Moderate Active Strategies			High Active Strategies			Very High Active Strategies		
		DE ³³⁶	M ³³⁷	DS ³³⁸	DE	M	DS	DE	M	DS	DE	M	DS	DE	M	DS
	Dow	X				X	X									
	DuPont	X				X				X						
	BASF	X							X							X
	Bayer	X										X	X		X	
	Mons.										X	X				X
	Syng.							X						X	X	

Source: Own Elaboration

The cross-case results for the active strategic responses to stigma allow me to put for the following propositions:

PROPOSITION 7

Firms with lowest exposure to stigma engage in less active strategies when dealing with stigma than do firms with highest exposure to stigma, the contrary is also true.

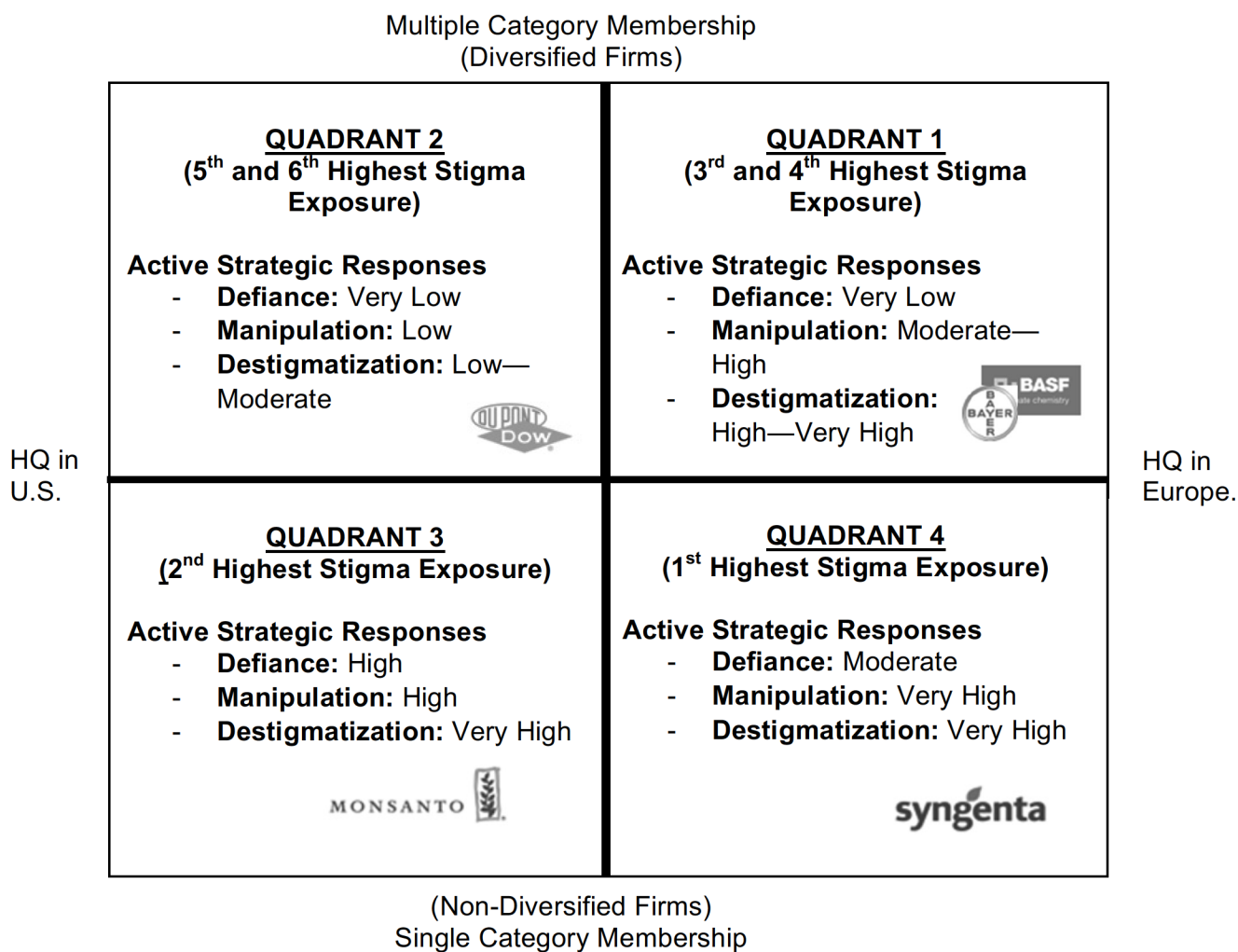
PROPOSITION 8

Firms with lowest exposure to stigma engage in less active strategies in order to move the industry from stigma to legitimacy than do firms with highest exposure to stigma, the contrary is also true.

³³⁶ DE stands for Defiance.

³³⁷ M stands for Manipulation.

³³⁸ DS stands for Destigmatization.

Figure 68: Overall Active Strategy II³³⁹

Source: Own Elaboration

³³⁹ Logos obtained from corporate websites.

CHAPITRE 6/CHAPTER 6

DISCUSSION ET CONCLUSION/ DISCUSSION AND CONCLUSION

This chapter concludes my research by describing the theoretical contributions and practical implications of the study. The objective of this chapter is to interpret the results in a way which illuminates the contributions made to theory and practice. This chapter discusses how my findings answer my research question, and how the findings fit in with existing literature on strategic responses to stigma. The chapter ends with a discussion of the limitations and avenues for future research.

When an industry experiences societal stigma, the level of stigma exposure each firm within the stigmatized industry experiences differs (Durand & Vergne, 2014; Vergne, 2012). This is true for an array of reasons such as regulatory and political factors, social factors and cultural factors (Runge, Bagnara et al., 2001). My research examined the following research question: ***How does exposure to stigma affect strategic response to stigma?***

The contributions of my thesis are straightforward but thought-provoking. Organizational stigma impacts firms differently based on their level of exposure to stigma. Although some scholars have addressed organizational stigma and have made efforts to understand firm responses to stigma, few studies if any have taken a different perspective by looking how firms have strategically responded to stigma by looking at longitudinal data, nor how exposure to stigma affects choices of strategic responses. My thesis merges the literature on strategic responses to institutional pressures, as well as strategic responses to organizational stigma literature. My research question responds directly to the call made by Roulet (2015, p. 30), who stated, “This study opens different paths for future research. In particular: what are the strategies used by organizations to face stigma?” Similar calls have also been made by Helms and Patterson (2014, p. 1454), who stated the presence of: “calls for theories on stigma’s removal.” My thesis also responds to the call made by Vergne (2012, p. 119) who mentioned the importance of also looking at stigma: “outcomes in a stigmatized industry populated by single-business organizations.” Vergne (2012, p. 119). My thesis has addressed some of these gaps. More precisely, my research answers the following question: ***How does exposure to stigma affect strategic response to stigma?*** This was done by creating the *Stigma Exposure-Response Model*. The following section provides an interpretation of the findings of my research.

6.1 Interpretation of Findings

The answer to my research question is depicted by the Stigma-Exposure-Response Model, which can be summarized by the following: Simply put, firms with the lowest exposure to stigma, engage in more passive strategic responses to stigma, whereas firms with the highest exposure to stigma engage in more active strategic responses to stigma. Passive strategic responses include avoidance and dilution strategies, and are characterized by actions used to protect the firm from stigma as opposed to the trying to destigmatized the industry. On the flip side, active strategic responses are those which are used to protect the industry as well as the firm. In other words, active strategic responses help to move the industry from one that experiences stigma to one of legitimacy, while passive strategic response does not help rid the industry of stigma.

Quadrant 1: BASF and Bayer

As previously discussed, Quadrant 1 includes BASF and Bayer, two firms which are diversified with membership in multiple categories, and with global headquarters located in Europe (area of higher stigma). Within Quadrant 1, Bayer has a higher percentage of sales in agriculture³⁴⁰ when compared to BASF, so therefore, Bayer has 3rd highest exposure to stigma, while BASF has 4th highest exposure to stigma. Results for quadrant 1 show both BASF and Bayer both exhibit moderate avoidance and very high dilution strategies. Moreover, both firms exhibit very low defiance strategies, moderate to high manipulation strategies and very high destigmatization strategies. The results for BASF and Bayer are not unforeseen.

BASF and Bayer engaged in moderate avoidance due to two counteracting forces: on the one hand, their global headquarters are located in an area of high stigma, making it so that avoiding stigma is difficult. On the other hand, they attempt to avoid stigma due to the fact they are engaged in multiple categories, and thus can attempt to conceal the stigma to a certain extent, by emphasizing other businesses and engaging in stigma dilution by blurring stakeholder expectations. For the above reason, the findings which show that BASF and Bayer both engaged in very high dilution was not astounding.

In terms of defiance behavior, the fact that both firms engage in very low defiance is also not surprising. This is because as firms who experience high stigma (but with potential for hiding behind non-stigmatized categories), the firms do not want to draw attention to stigma by outwardly

³⁴⁰ Percentage of sales in agriculture in 2015.

defying the sources of stigma. In terms of manipulation strategy, the fact that BASF and Bayer engage in moderate to high manipulation is also not unforeseen. BASF and Bayer are located in an area of high stigma, and have a lot to gain by trying to manipulate public perception. Similar logic follows for the results of destigmatization. In terms of destigmatization strategy, the firms engage in high to very high destigmatization strategies. This is also not startling because these firms have global headquarters located in Europe, where hostile audiences strongly stigmatize the firm. Destigmatization involves framing the industry in terms of sustainable agriculture and the findings show that both BASF and Bayer are active in trying to destigmatize the industry, as they have much to gain if they are successful in removing stigma.

Overall, the results show that BASF and Bayer engage in more active strategic responses to stigma when compared to Dow and DuPont. This also makes sense because BASF and Bayer have more to gain if successful in moving the industry from a state of stigma to one of legitimacy when compared to Dow and DuPont. This is because both BASF and Bayer have higher exposure to stigma when compared to Dow and DuPont.

Quadrant 2: Dow and DuPont

As examined earlier, Quadrant 2 includes DuPont and Dow, two firms that are diversified with membership in multiple categories, and global headquarters located in the U.S. (area of lower stigma). Within Quadrant 2, DuPont has a higher percentage of sales in agriculture³⁴¹ when compared to Dow. Therefore, DuPont has 5th highest exposure to stigma, and Dow has 6th highest exposure to stigma. Results for quadrant 2 show that Dow and DuPont exhibit low avoidance, and very high dilution. Moreover, both these firms exhibit very low defiance, and low manipulation. The results also show that these firms exhibit low to moderate destigmatization efforts. For the most part, the results for Dow and DuPont are not unexpected, with the exception of avoidance results.

Dow and DuPont engaged in low avoidance, which is very surprising. It would have made more sense if the results showed these firms engaging in high avoidance of stigma because they experience less stigma. However, the results can be interpreted in the following way: the fact that Dow and DuPont have less to lose from admitting to stigma when compared to BASF and Bayer, means they are more forthcoming about the existence of stigma. In other words, Dow and DuPont have global headquarters located in the U.S. (an area of lower stigma), and therefore, admitting

³⁴¹ Percentage of sales in agriculture in 2015.

that stigma exists is not an immediate threat because local stigma is not as high when compared to European audiences. As with BASF and Bayer, Dow and DuPont both engage in very high dilution, which was expected. These firms are both multiple category membership firms who want to dilute the stigma that they face by blurring stakeholder expectations and emphasizing their activities in non-stigmatized industries. Even though they have the least exposure to stigma among the Big Six firms, Dow and DuPont still experience stigma, therefore motivating them to dilute it.

In terms of defiance behavior, the fact that both firms engage in very low defiance is also not shocking. This is because as firms which experience stigma (but with potential for hiding behind other categories), these firms do not want to draw attention to stigma by outwardly defying the sources of stigma. In other words, if they want to engage in passive responses, which would allow them to hide behind their other businesses, outwardly defying stigma and drawing attention to stigma would be counterproductive.

In terms of manipulation behavior, the fact that Dow and DuPont engage in low manipulation is also not unpredicted. Dow and DuPont are located in an area of lower stigma, and have less to gain by trying to manipulate public perception, thereby explaining why they engage in less manipulation than firms which have higher exposure to stigma. In terms of destigmatization behavior, Dow and DuPont engage in low to moderate destigmatization. This is also not unforeseen. Destigmatization involves framing the industry in terms of sustainable agriculture and is a very active strategic response. Both Dow and DuPont are less active in trying to destigmatize the industry because doing so would draw attention to them, and they have less to gain if successful.

Overall, the results show that Dow and DuPont engage in less active strategic responses to stigma when compared to BASF and Bayer. This also makes sense because Dow and DuPont have less to gain from trying to move the industry from a state of stigma to one of legitimacy when compared to BASF and Bayer.

Quadrant 3: Monsanto

As examined beforehand, Quadrant 3 includes Monsanto, a non-diversified firm with membership in a single stigmatized category and global headquarters located in the U.S. (area of lower stigma). It therefore has the 2nd highest exposure to stigma, behind Syngenta. Results for Quadrant 3 show that Monsanto exhibits very low avoidance, and very low dilution. The firm

also exhibits high defiance, high manipulation, and very high destigmatization. The results for Monsanto are not unforeseen and help explain why the firm has such a negative reputation (Skerritt, May 19, 2016). Monsanto has been dubbed “monsatan”³⁴² by activists (Skerritt, May 19, 2016), and Monsanto has been shown to be the most hated company in America (Skerritt, May 19, 2016). My results show that of the Big Six firms, Monsanto engages in the most defiance strategies which may contribute to the fact that they have the worst reputation.

Monsanto engages in very low avoidance, which is not surprising, as Monsanto is unable to avoid stigma because the stigma that they face is so strong that avoiding it would make the firm seem not genuine and secretive. Moreover, Monsanto has little ability to avoid stigma as there are no other industries in which the firm operates in order to dilute stigma, which also explains why the firm engages in very low dilution.

In terms of defiance behavior, the fact that Monsanto engages in high defiance is very much expected. Monsanto experiences high stigma because they are only in one single stigmatized industry and they have a lot to lose from not defending themselves against GMO critics. Moreover, the results make sense given Monsanto has a very tarnished reputation (Skerritt, May 19, 2016) and their defiance acts as a way of strengthening hostile audiences' negative perceptions. What is fascinating is the fact that Monsanto exhibits higher defiance than Syngenta, who has higher exposure to stigma than Monsanto. This helps explain why Syngenta's reputation is not as tarnished as Monsanto's.

In terms of manipulation behavior, the fact that Monsanto engages in high manipulation is also anticipated. Monsanto is a single category membership firm experiencing high stigma, and therefore, has a lot to gain by trying to manipulate public perception, and conversely, a lot to lose if stigma persists. These results are also in line with the findings Monsanto engages in very high destigmatization. Destigmatization involves framing the industry in terms of sustainable agriculture, which Monsanto does consistently and unequivocally.

Overall, the results show Monsanto engages in more active strategic responses and less passive strategic responses to stigma when compared to BASF, Bayer, Dow and DuPont. This is intuitive because Monsanto has more to gain from trying to move the industry from a state of stigma to one of legitimacy when compared to multiple category membership firms. Overall, the

³⁴² Combination of the words “Monsanto” and “Satan.”

results show Monsanto is active in trying to destigmatize the industry because the firm has much to gain if they are successful in removing stigma.

Quadrant 4: Syngenta

As previously discussed, Quadrant 4 involves Syngenta, a firm with membership in a single stigmatized category with global headquarters located in Europe (area of higher stigma). It therefore has 1st highest exposure to stigma. Results for Quadrant 4 show Syngenta exhibits very low avoidance and very low dilution. The firm also exhibits moderate defiance, very high manipulation and very high destigmatization.

The results for Syngenta are not surprising. Syngenta engages in very low avoidance. This is due to Syngenta being unable to avoid the stigma because the stigma they face is so strong that avoiding it would make the firm seem sneaky and deceptive. Syngenta also engages in very low dilution which is also not unexpected. The firm is unable to dilute the stigma that they face by blurring stakeholder expectations because they only operate in one stigmatized category.

In terms of defiance behavior, the fact that Syngenta engages in moderate defiance is also not surprising. Syngenta does not engage in as much defiance as Monsanto, but more defiance than all diversified firms. This is because Syngenta is exposed to more stigma than diversified firms because they are only part of one single stigmatized industry. The results are somewhat surprising as one would expect Syngenta to engage in the most defiance because it has the highest exposure to stigma. However, the results showing that Monsanto defies stigma more than Syngenta is not surprising given Monsanto's negative reputation. In sum, Syngenta still engages in defiance strategies because the firm has much to lose from not defending themselves against GMO opponents. In terms of manipulation behavior, the fact that Syngenta engages in very high manipulation is also not surprising. This is because Syngenta is a single category membership firm experiencing high stigma, and therefore, has a lot to gain by trying to manipulate public opinion.

In terms of destigmatization behavior, the firm engages in very high destigmatization, which was expected. Destigmatization involves framing the industry in terms of sustainable agriculture. Syngenta is active in trying to destigmatize the industry, as the firm has much to gain if they are effective in eliminating stigma.

Overall, the results show that Syngenta engages in more active strategic responses and less passive strategic responses to stigma when compared to BASF, Bayer, Dow and DuPont.

This is intuitive because Syngenta has the greatest to gain from trying to move the industry from a state of stigma to one of legitimacy when compared to multiple category membership firms. Overall, the results show that Syngenta is active in trying to destigmatize the industry because the firm has much to gain if they are successful in removing stigma and like Monsanto, much to lose if the reputation of the industry continues to remain stigmatized.

6.2 Theoretical Contributions

My research merges the literature on strategic responses to institutional processes put forth by Oliver (1991); as well as the literature on strategic responses to stigma put forth by Hudson and Okhuysen (2009); Reinmoeller and Ansari (2016); Hudson (2008); Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015); Vergne (2012); Hsu (2006); Tracey and Phillips (2016) and Hampel and Tracey (2016). See *Table 69: Passive Strategic Responses to Stigma: My Contribution* and *Table 70: Active Strategic Responses to Stigma: My Contribution* for depictions of how the development of my overarching theoretical dimensions, as well as my second-order themes and first order categories fit into the current literature on stigma. My analysis synthesizes the current literature on strategic responses to organizational stigma by merging it with strategic responses to institutional processes. This is done in order to shed light on the strategic responses used by firms to respond to stigma, while also comparing the differences in responses between firms with varying degrees of exposure to stigma. My research makes contributions to stigma literature and legitimation literature by developing the *Stigma Exposure-Response Model*.

6.2.1 Stigma-Exposure Response Model

My *Stigma Exposure-Response Model* answers the following research question: **How does exposure to stigma affect strategic response to stigma?** My model predicts which firms are more likely to try to engage in passive or active strategic responses to deal with stigma. I engaged in a multiple case study analysis in order to create theory. My findings show firms which have the highest exposure of stigma strength, engage in the most active strategic responses, and these active strategic responses have the purpose of moving the industry from a state of stigma to one of legitimacy. These firms, namely Monsanto and Syngenta, are the ones which use the most active strategic responses. This makes sense as these firms are the ones which are most heavily influenced by stigma and are the ones who are more dependent on government regulations and perceptions of global seed and agrochemical for their firm survival. The other four

firms, the multiple category membership ones which operate in diversified industries face less exposure and respond with less active responses to stigma.

Specifically, my model predicts that firms who have less exposure to stigma (level 1) engage in greater use of passive strategic responses (level 2a), which means that these firms are less active in moving the industry from a state of stigma to one of legitimacy (level 3a). My model also predicts that firms who have more exposure to stigma (level 1b) engage in greater use of active strategic responses (level 2b), which means that these firms are more active in moving the industry from a state of stigma to one of legitimacy (level 3b). See *Table 58: Propositions Overview and Contribution to Theory* and *Figure 59: Stigma Exposure-Response Model* in Chapter 5.

The Stigma Exposure-Response Model emerged from my findings. My research was conducted by creating two overarching theoretical mentions (*Passive Strategic Responses and Active Strategic Responses*), five second-order themes (*Avoidance Strategy, Dilution Strategy, Defiance Strategy, Manipulation Strategy and Destigmatization Strategy*), as well as fourteen first-order categories (*A: Avoiding mention of existence of stigma; B: Escape Behaviors; C: Concealment of hostile audiences' viewpoints; D: Expectation Blurring; E: Defiance against those against GMOs; F: Critical of GMO regulations; G: Defiance to GMO labeling; H: Providing education/training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics; M: Membership in industry associations*). All of the above dimensions, themes and categories emerged from my findings and were created by an iterative process of going back and forth from data to literature.

The following section describes my theoretical contribution. It is divided into two sections, and I describe my contributions based on each overarching theoretical dimension.

Overarching Theoretical Dimension #1: Passive Strategic Responses

The first overarching theoretical dimension in my research consisted of avoidance strategy and dilution strategy. My theoretical contributions are discussed in turn. See *Table 69: Passive Strategic Responses to Stigma: My Contribution* for an overview.

(1) Avoidance Strategy

My second-order theme, avoidance strategy was created based on the current literature and by making the link between *shielding and hiding strategies* as discussed by Hudson and Okhuysen (2009), Reinmoeller and Ansari (2016), and Hudson (2008) as well as the avoidance

tactic of concealing put forth by Oliver (1991). Moreover, my avoidance strategy also makes the link between *disengagement, decoupling, and exiting strategies* as described by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) as well as the *escape tactic* described by Oliver (1991). In sum, my second-order theme of avoidance, encompasses three first order categories: *A: Avoiding mention of existence of stigma; B: Escape Behaviors; and C: Concealment of hostile audiences' viewpoint*, which all stem from the synthesis on the literature put forth by Hudson and Okhuysen (2009), Reinmoeller and Ansari (2016), Hudson (2008), Devers, Dewett et al. (2009), Durand and Vergne (2014), Piazza and Perretti (2015) and Oliver (1991).

My research finds that stigma avoidance strategies are used more by multiple category membership firms, and by firms with lowest exposure to stigma. My research examined shielding and/or hiding strategies by examining whether or not the firm explicitly mentions the existence of stigma and or public disapproval about their GMO activities. This was examined with coding for first-order category *A: Avoiding mention of existence of stigma*. My results add to the literature by showing that multiple category membership firms use this strategy more than single category membership firms. More precisely, multiple category membership firms located in Europe use this strategy more than the firms located in the U.S. Avoidance of stigma is also examined with coding for first-order category *C: Concealment of hostile audiences' viewpoint*. My results add to the literature by showing that firms with lowest exposure to stigma, or firms with multiple category membership engage in more concealment tactics.

Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) look at industry disengagement, decoupling and/or exiting strategy. My research looks at these strategies, and the findings show that firms operating in stigmatized industries do not often engage in industry disengagement, decoupling or exiting strategies, regardless of level of exposure to stigma. This research examined disengagement/decoupling/exiting strategies by coding for first-order category *B: Escape Behaviors* by examining whether or not the firm engaged in escape behaviors whereby the firm explicitly mentions exiting stigmatized activities, or locations of high stigma. My research finds that escape behaviors were found by BASF and Monsanto, indicating that category membership, and stigma at global headquarter location may not be a factor. My results add to the literature by showing that level of exposure to stigma may not matter when it comes to escape behaviors. The reason why this may be the case is because stigmatized firms, like the global seed and agrochemical industry are very profitable and despite the fact that the industry faces stigma, the industry is still capable of generating wealth, and therefore escaping

the industry or location of stigma may not be necessary. See Table 69: *Passive Strategic Responses to Stigma: My Contribution* for an overview.

(2) Dilution Strategy

My second-order theme, dilution strategy was created based on the current literature and by making the link between category straddling, dilution, migration and specialist strategies put forth by Vergne (2012), Hsu (2006) and Hudson (2008). My research makes the link between these strategies and shows that firms who have the least exposure to stigma are also firms who are capable of engaging in dilution strategies with the aim of blurring stakeholder expectations. My research examined whether single category membership firms attempted to blur stakeholder expectations by using the dilution strategy. This was examined with coding for first-order category *D: Expectation Blurring*. My results add to the literature by showing that stigma dilution strategies are used more by multiple category membership firms, and by firms with lowest exposure to stigma. This is because these firms are both able to avoid stigma and able to dilute stigma. Single category membership firms, or firms with highest exposure to stigma are not able to use these strategies, and therefore opt for more active strategic responses instead of passive ones. See Table 69: *Passive Strategic Responses to Stigma: My Contribution* for an overview.

Table 69: Passive Strategic Responses to Stigma: My Contribution

Overarching Theoretical Dimensions	Second-order Themes	First-order Categories	Associated Theory and Authors	
			Link with Organizational Stigma Literature	Link with Strategic Responses to Institutional Processes
Passive Strategic Responses	1— Avoidance of Stigma	A	Shielding Strategy: Hudson and Okhuyesen (2009); Reinmoeller and Ansari (2016) Hiding Strategy: Hudson (2008)	A link between <i>shielding and hiding strategies</i> as discussed by Hudson and Okhuyesen (2009), Reinmoeller and Ansari (2016), and Hudson (2008) can be made with the conceal tactic of Oliver (1991).
		B	Disengagement/Decoupling /Exiting Strategy Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015)	A link between <i>disengagement, decoupling, and exiting strategies</i> as described by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) can be made with the <i>escape tactic</i> by Oliver (1991).
		C	Shielding Strategy Hudson and Okhuyesen (2009); Reinmoeller and Ansari (2016) Hiding Strategy: Hudson (2008)	A link between <i>shielding and hiding strategies</i> as discussed by Hudson and Okhuyesen (2009), Reinmoeller and Ansari (2016), and Hudson (2008) can be made with the conceal tactic of Oliver (1991).
	2— Stigma Dilution	D	Category Straddling/Dilution /Migration Strategy Vergne (2012); Hsu (2006) Specialist Strategy: Hudson (2008)	A link between <i>category straddling, stigma dilution, stigma migration and specialist strategies</i> discussed by Devers, Dewett et al. (2009); Durand and Vergne (2014); Piazza and Perretti (2015) and Hudson (2008) can be made with the <i>buffer tactic</i> of Oliver (1991).

Overarching Theoretical Dimension #2: Active Strategic Responses

The second overarching theoretical dimension in my research consisted of defiance, manipulation and destigmatization strategies. My theoretical contributions are discussed in turn. See Table 70: *Active Strategic Responses to Stigma: My Contribution*.

(3) Defiance Strategy

My second-order theme, defiance strategy was created by using the current literature and by making a link between the *challenge strategy* put forth by Hudson (2008) as well as the *challenge tactic and attack tactic* put forth by Oliver (1991). My thesis does this by examining the following first-order categories: *E: Defiance against those against GMOs; F: Critical of GMO regulations and G: Defiance to GMO labeling*. My results add to the literature by showing how exposure to stigma affects the use of a defiance strategy for dealing with stigma. My findings show that defiance strategies are used by firms with higher exposure to stigma. See Table 70: *Active Strategic Responses to Stigma: My Contribution*.

(4) Manipulation Strategy

My second-order theme, manipulation strategy was created using the current literature and by making a link between Hudson (2008) who looked at the *challenge strategy* and Oliver (1991) who looked at strategic responses to institutional. My thesis does this by examining the following first-order categories: *H: Providing education/Training; I: Political advocacy/lobbying; J: Explicit intent to change perceptions; K: Use of anecdotal evidence/storytelling; L: Use of fear tactics and M: Membership in Industry associations*. My results add to the literature by showing how exposure to stigma affects the use of a manipulation strategy for dealing with stigma. My findings show that manipulation strategies are used by firms with higher exposure to stigma. See Table 70: *Active Strategic Responses to Stigma: My Contribution*.

(5) Destigmatization Strategy

My second-order theme, destigmatization strategy was created using the literature by Tracey and Phillips (2016) and Hampel and Tracey (2016) who look at destigmatization. My research extends these findings by looking at the ways in which exposure to stigma affects the firms' use of industry reframing techniques in order to destigmatize the industry and reframe it in terms of sustainable agriculture. My thesis does this by examining first-order category *N: Sustainable Agriculture*. My results add to the literature by showing that destigmatization strategies are used by firms with higher exposure to stigma. See Table 70: *Active Strategic Responses to Stigma: My Contribution*.

Table 70: Active Strategic Responses to Stigma: My Contribution

Overarching Theoretical Dimensions	Second-order Themes	First-order Categories	Associated Theory and Authors	
			Link with Organizational Stigma Literature	Link with Strategic Responses to Institutional Processes
Active Strategic Responses	3 — Defiance to Stigma	E	Defiance against those against GMOs	A link between <i>challenge strategy</i> as described by Hudson (2008) can be made with <i>challenge tactic</i> and <i>attack tactic</i> put forth by Oliver (1991)
		F	Critical of GMO regulations	
		G	Defiance to GMO labeling	
		H	Providing education/training	
		I	Political advocacy /lobbying	
	4 — Manipulation of Stigma	J	Explicit intent to change perceptions	
		K	Use of anecdotal evidence/ storytelling	
		L	Use of fear tactics	
		M	Membership in Industry associations	
		N	Sustainable Agriculture	
	5 — De-stigmatization		Destigmatization Strategy Tracey and Phillips (2016) Hampel and Tracey (2016)	A link between <i>destigmatization strategy</i> as described by Hampel and Tracey (2016) and Tracey and Phillips (2016) can be made with the <i>influence tactic</i> as described by Oliver (1991).

Source Own Elaboration

6.3 Managerial and Practical Contributions

This section applies the findings to practical settings to derive managerial implications. First, managers of firms in controversial industries can use this research in order to gain a more conscious understanding of how they strategically respond to stigma compared to their peers and competitors. Understanding how their responses differ from their competitors' responses in a conscious way can help managers realign or change their strategy in a more deliberate way by being one step ahead of their competitors. For instance, if firm A can anticipate the ways in which firm B will strategically respond to stigma in the future, firm A can take steps to engage in more affective strategies by analyzing the competitors' future strategies and overcoming its limitations.

Secondly, the global seed and agrochemical industry is currently undergoing a third wave of consolidation with the proposed mergers of the Big Six firms and ChemChina (Moss, 2016). The proposed mergers of Syngenta and ChemChina, Dow and DuPont, and Monsanto and Bayer would turn the Big Six into the Big Four. How will stigma strategic responses to stigma in this industry change under this new landscape? In other words, with the third wave of industry consolidation in the global seed and agrochemical industry currently underway, how will the eradication of single category membership firms in this industry affect stigma strategic responses in this industry? My research finds that the firms taking on the burden of destigmatization and industry reframing falls mostly on single category membership firms. With no single category membership firms left, how will this change the dynamics of industry legitimization? Does this mean that with increasing consolidation in the industry, these chemical firms will be able to hide behind their other businesses? Will transparency and CSR reporting be jeopardized with mega-mergers in the industry? Also, less competition means it is less likely to be competitive in CSR, which will not be in the consumers' best interest. My results show single membership category firms engage in more defiance, manipulation and destigmatization efforts. Without any very large single category membership firms left in the industry, what impacts will this have on public policy and relationship with governments? This points to a potential shift of strategy for the industry when it comes to stigma management. This can have far-reaching implications for public policy in the industry.

Thirdly, these findings can have implications for companies which use GMOs as inputs to their products. Many large companies use GMO products as inputs to their production, including Pepsi-Co, Kellogg's, General Mills, Nestle/Gerber Co., Hershey's, Coca-Cola, Land O'Lakes and Smuckers (Sarich, 2014). Stigma in this sector has caused many headaches for these firms. For instance, in 2013, PepsiCo settled for \$9 million as part of the class action lawsuit over the

company's "Naked" Juice, and the use of GMO ingredients when the packaging claimed to be all natural (Tepper, 2013). Kellogg's faced similar issues with their Kashi product line which also claimed to be "all natural," the company paid \$4 million in a false advertising lawsuit. Ronald McDermott in 2013, Vice-President of Kellogg's said, "Consumers are interested in knowing their food origin. They want transparency in the entire value chain. If we do not care about their interest, they will not care about us" (Sarich, 2014). Major food companies are realizing the importance of ensuring that they take into account the interests of their consumers. This should mean that food companies who use GMO inputs for their production, should be interested in helping the agricultural biotechnology industry legitimize itself. What role do these firms play in moving the industry from stigma to legitimacy? Why is it that some food companies are proud to advertise "GMO-free" products, while others use GMOs and try to distract consumers from realizing it? The GMO industry not only has to persuade consumers in order for farmers to buy their seeds, but many large food companies are starting to drop GMO products in order to appease consumers of their products (Pierson, Jan 3, 2014).

Recently, the first genetically modified animal entered the food supply. AquaBounty technologies, a company located in Maynard, Massachusetts and Fortune, Prince Edward Island (AquaBounty, 2017), has begun selling GMO salmon in Canada (Reid, Aug 9, 2017). More precisely, in Canada approximately five of the 121,000 tons of the Salmon farmed in Canada was genetically modified in 2016 (Glenza, Aug 23, 2017). Although this doesn't represent a huge amount, many large food chains such as Costco, Sobeys, Loblaws (Glenza, Aug 23, 2017) and IGA (Reid, Aug 9, 2017) have reassured consumers that they will not carry such products. GMO salmon is farmed to reach adult maturity between four and six times faster than non-GMO salmon (Gallegos, Aug 4, 2017), and the salmon eat between 20 and 25 percent less (Gallegos, Aug 4, 2017). This means that firms in the GMO industry need not only tackle farmers and consumers, but also tackle the perceptions of large grocery chains, as well as restaurant supply companies, which would allow them to get help in the fight to end stigmatization of the industry. In Canada, no labeling law exists, and therefore consumers may be eating the GM salmon without being aware (Glenza, Aug 23, 2017).

Other genetically modified applications are beginning to materialize as well. For instance, moths have recently been genetically engineered to help combat crop damage to cabbage crops due to the diamondback moth (Mullin, Jul 7, 2017). These genetically engineered moths are being created in a way that makes them die and unable to reproduce. These moths are being designed by Oxitec, a firm owned by the biotechnology company, Intrexon (Mullin, Jul 7, 2017). What role

do these companies have in trying to change the perception of the global seed and agrochemical industry? My study has implications for these firms as well. More precisely, firms operating in genetic engineering with impacts to agriculture or food, whether directly (ex. genetically modified seeds, and genetically modified salmon) or indirectly (genetically modified moths), have a lesson to learn from my research. The next section describes the limitations of my study.

6.4 Limitations of the Study

Like all studies, this study is prone to several limitations. The limitations of my study are listed below:

1. The largest limitation of this study is the fact that all the data was from publicly available archival documents. I believe that having other sources of data collection would have enriched the analysis. However, the fact that I looked at a wide range of documents over a wide range of years with thousands of pages of data for each company, my analysis is still meaningful and insightful.
2. Due to the use of the case study method, my study has limited generalizability, and therefore future research would need to be conducted that is quantitative in nature.
3. Researcher bias is present in this study. The way in which I collected the information and analyzed it is prone to bias of personal interpretations. Despite the fact that I used a highly systematic way of analyzing the data, eliminating all personal bias is not possible.
4. My study might have been improved had interviews with executives of the Big Six firms been conducted. However, these interviews would have probably been prone to bias as the executives would want to put their best foot forward and not have necessarily been completely truthful.

The next section discusses the avenues for future research.

6.5 Avenues for Future Research

The results of my research raise fruitful areas for future research on strategic responses to stigma under different environmental conditions. Despite the economic contribution that stigmatized sectors play in the economy, study of stigmatized sectors has been overlooked and scholars have addressed the need to pay greater attention to stigmatized industries. More specifically, my suggestions for future research are the following:

1. An empirical study with a larger sample size looking at strategic responses to organizational stigma in order to be able to generalize the results of the findings to different

industries would be a good avenue for future research. This study would involve a more quantitative look at the data and therefore would not involve in-depth case studies.

2. Conversely, a second area for future research could involve a more detailed look at sub-strategies within strategic responses literature. This would require a more in-depth qualitative case study analysis but would require a smaller number of cases in order to make it feasible. This could further add to the specifications of my *Stigma Exposure-Response Model*.
3. In order to be able to generalize my findings to other industries, a case study of other industries experiencing stigma could be conducted. For example, further research would need to be conducted in a similar way as conducted to mine with a different industry in order to look for similarities and differences. An example of another industry could be the pornography industry—an examination of different media companies and how single category vs. multiple category firms respond differently to public scrutiny and the tactics they use to change public perception of the adult movies industry. As with the GMO industry, public perception of pornography differs greatly among U.S. and European consumers. Therefore, a similar methodology may be applied to a study of this sector.
4. A future study could involve a case study of the GMO salmon company, AquaBounty Technologies and the ways in which they tackle stigma. This industry would be assumed to face higher stigma than plant biotechnology as this technology is newer, and it is the first animal GMO to enter the food chain (Reid, Aug 9, 2017).
5. In order to avoid delving into the topic of corporate social responsibility, my thesis did not look at tactics aimed at using corporate social responsibility in order to tackle stigma. Looking at how CSR efforts differ based on the level of stigma exposure could be a fruitful area for future research.

6.6 Conclusion

In conclusion, the GMO industry is a sensitive topic where people hold very strong opinions (Alesci, Apr 18, 2016). MNE's in this industry have the difficult task of trying to remove the stigma associated with the GMO industry. My thesis answers the question: ***How does exposure to stigma affect strategic response to stigma?*** My findings allow me to construct the Stigma Exposure-Response Model and show firms with the highest exposure to stigma engage in active strategic responses to stigma with the aim of purging the stigma from the industry. On the other hand, those firms with the lowest exposure to stigma engage in more passive strategic response with the aim of concealing their activities in order to preserve their public image.

In conclusion, wherever one stands on the GMO issue, consumers should think critically about the source of other everyday food products they are consuming as well. For instance, propylene glycol, a form of anti-freeze is found in many foods that we consume every day such as ice-cream (Eaves, Nov 13, 2014), icing, whisky, ice tea, frosting, salad dressings, and boxed cake mix (Fantozzi, Oct 30, 2014). Although generally recognized as safe (GRAS), by the FDA, propylene glycol when applied topically has been associated with hyperosmolality, lactic acidosis, intravascular hemolysis, complications of CNS depression, seizures, coma, hypoglycemia and renal failure (ATSDR, 2017). Are GMOs the only thing we have to fear?

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