REPUTATIONAL CAPITAL AS AN ETHICAL QUESTIONING OF TECHNOLOGICAL INNOVATION:
The case of MONSANTO

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Abstract
The introduction of transgenic crops as an alternative to solve the problem of food deficiency in most economies represents an area of opportunity for the development of biotechnology which in recent decades has pioneered Monsanto. Through literature review and a qualitative analysis of the main theoretical approaches that explain the behavior and strategies of expansion and growth of the company, checking the assumption that the active participation of society in the evidence of damage caused determine the strategic value of corporate reputation of leading transnational disputes, uncertainty and distrust regarding their products and processes, assuming that a danger to the health of the population and the environment in general.

Keywords
Corporate reputation; Distrust; Strategies; Transgenic.

Introduction
In recent decades, society’s concern has focused on demographic matters primarily associated with strong population growth, mainly in developing countries; whose threat to natural resources and the environment in general, provide serious consequences socio-economic impacts not only in those economies, but also in other developed nations. The impacts of population growth have been problematic after market changes and the heavy losses in the production of agricultural fields, as a result of strong drought and frost problems. From the perspective that there is not sufficient access to nutritious foods that reduce the rate of malnutrition in the population who are at all stages of life, the problem has been classified as food insufficient and unsustainable.
In this way, the implementation of public policies and new alternatives based on actions that favor attention deficiency problem in food production is a challenge in each of the economies taking care not mainly relying on imports of basic grains. So, before that problem, numerous studies suggest that GM crops represent a viable option that can contribute to increased yields and agricultural production, without being necessary to increase the area under cultivation, forest rescuing the imminent logging and deforestation to expand agricultural land. The rescue alternative of ecosystem pointed to the investment and development of GM crops, and that agriculture biotechnology enables to obtain healthier foods with better flavor and reduced pesticide use, increased crop yields, better management of water and reduced greenhouse gas emissions and other benefits, which not only supports to farmers, but also benefits families and consumers in general. For this reason, companies like Monsanto are at the forefront of technology and pose to be found in the best position to contribute to the global challenges facing society today, generating enough food for the growing population which is increasingly every day in an effort to abate hunger and extreme poverty by developing sustainable agriculture.

**Background**

Today, sustainable agriculture has been presented as the solution to the problems of food shortage facing most economies around the globe, so that companies like Monsanto, Bayer, Syngenta and DuPont Pioneer American, have expressed to be prepared to reduce poverty and ensure food security through processes such as genetic improvement. The seed business by itself, it is quite competitive, and unlike many others, the purchase of the input is performed annually as seasonal or peak period and depending on the good or bad experience in the harvest, which will determine the purchase of the same or another seed for the next season, ensuring competition and constant innovation of the company.

While the leading biotechnology that has been at the forefront and the public focus has been Monsanto, it has been mainly in regard to such innovation and improvement of agricultural seeds. Because anti-biotechnology activist groups and unfair competitors or followers companies that have taken pains to make propaganda against, trying to prove that the success is due to anti-competitive behavior and further damaging the company’s reputation.

Reputational capital is a valuable tool that the company develops over time and can make decisions about which products to buy, where to invest and where to work. In this way, the strategic value of a reputation characterizes the company making it attractive or not and expanding their options not only for managers, but for the general public consumer. In the business environment, corporate reputation can be considered as an intangible asset and strategic organization capable of representing a proof of competitiveness of the firm. Meanwhile, Kaplan and Norton (1996) suggest that the proper management of intangible assets may be favorable to business relationship with customers, ensuring the loyalty of existing ones and offering services which allow customers cleave segments and other market areas.
**Problem delimitation**

Thus, in an environment that historically technological contributions and achievements of Monsanto have represented a chronological sum of mistakes. Because the bad reputation of the company, the innovations achieved not only generates uncertainty in the population, but a full assurance that their contributions represent a danger to humanity.

**Justification**

In the context in which Monsanto is developing, it is in the best position to meet the demand for food that suggests a growing world population and fight hunger through the development of sustainable agriculture, not only supplying the agricultural sector with seeds, but products of biotechnology, agrochemical and technology in general. However, one of the main contributions of Monsanto and perhaps the most representative made lately, has been the production of GM foods. Against this production of GM foods, several international environmentalists’ organizations have struggled since its inception. The GM foods are the same ones that Greenpeace (2011) has defined as living with a technique artificially created by inserting a plant or animal genes of viruses, bacteria, plants, animals and even humans, in order to produce an insecticidal substance or give resistance to herbicides.

This invention has been the trigger for society to turn against Monsanto’s activities, arguing that the production of this type of seed varieties not only limits natural native varieties of the region, pollutes wildlife, reduce biodiversity and chemically contaminate soil and groundwater. Missouri’s firm through its actions and creations, historically has been involved or has been responsible for various adverse events:

- In the beginning, Monsanto made strategic alliances with one of the most controversial groups in history: Monsanto who became one of Coca-Cola main suppliers, mainly saccharin and other sweeteners.

- Participated in the production of the first nuclear bomb used during World War II, and then operated an American plant of nuclear in the early 80’s.

- The creation of the pesticide DDT in 1944. The substance was banned in countries like Hungary, Norway, Sweden and the US itself.

- The company Monsanto acted as a supplier of Agent Orange to the U.S. Army during the Vietnam War, substance which killed around 400000 people, causing damages to around half a million babies in the following years.

- Creating the growth hormone "bovine somatotropin" (BST), used in countries like Brazil, United States and Mexico, whose use has been banned in the rest of the world to be linked
with health problems, such as cancer.

- The main use of aspartame causing cancer and diabetes. Monsanto through a vertical integration Strategy, founded in 1980 the company NutraSweet, building a monopoly of poisons no calorie sweeteners.

- Reduction in seed variety. Using horizontal integration (buying organic seed companies) Monsanto over the years has been commissioned to market only exclusive products they produce.

- Using genetic and toxic methods of bees on crops.

- Creating herbicides "non-selective" as Roundup (the patent expired in 2000) whose main ingredient is Glyphosate that kills plants by inhibiting their ability to generate aromatic aminoacids.

Given these developments, Monsanto has acquired the title of the worst company in the world, so without making value judgments, such appointment is based on the market power that the company has, since despite this, its sales and global presence foster its growth and power.

Assumption

Despite the deniability strategy and conduct a carry on whitewash of responsible image, according to Delgado (2006), the more powerful the technology, the consequences can be profound. Then, the bad reputation of Monsanto creates uncertainty and mistrust in society in regard to innovations, assuming its actions are the cause of danger to people and the environment in general.

Theoretical framework

The connotation of the literature review arises regarding theoretical models, by which it is possible to understand the behavior of Monsanto in these 112 years, determined by the realization of important strategic alliances with other TNCs, purchases and acquisitions of firms that have facilitated some processes execution and reduce its competition. Similarly, the theoretical conception of the various expansion strategies implemented by the leading producer of GMOs is identified by the link between reputation management and the ability to create value for the firm, understanding the nature of reputation as enterprise resource.

Strategic alliances

According to Hitt et al (1997) in business, formalizing a partnership is carried out in response to a particular strategy that might well be addressed with the implementation of another strategy. Thus, Tallman and Shenkar (1994) propose that an alliance can conceive how a managerial process and organizational issues arising from whether economic or not, and by means of a cost-benefit assessment of the process of this alliance. Incidentally, Das and Teng (1997) determined that proper management of the alliance is a necessary process, though not sufficient, for the success of the
same, whose decision should be made based on formalization of the strategy to continue the business, since according Ariño and De la Torre (1998), these partnerships evolve while the company strategy does.

Therefore, according to McKelvey (1997) and, Alcázar and Martínez (2004), the evolution of a company that has strategic alliances with other companies, is designed simultaneously with the changing environment. Thus, a match between the goal of the alliance and strategies of the companies involved is made based on the competitive environment, institutional and organizational in which they operate.

**Vertical integration**

Currently, companies face some problems that can lead to aggravated constraints which hinder the achievement of goals or objectives thereof, being necessary to resort to various strategies to obtain new advantages over the competition. According to Villarreal and Gomez (2009), integration is a strategy that allows increasing the benefits and profits of organizations by improving processes, adding value and increasing profitability, allowing better opportunities to stay in the industry. Business integration can occur vertically, one in which the firm attempts to control the successive stages of the value chain of the product, or by way of horizontal integration, one in which it fosters cooperation with competitors in the same stage of the value chain.

According to Colangelo (1995), vertical integration produces higher yields than horizontal integration. However, Hill and Gareth (2005), state that horizontal integration increases the profitability as it tends to reduce costs. By contrast, vertical integration according to Mpoyi (2003), can determine the degree to which the company controls the production and distribution. Similarly, the sequence of activities is the process which provides value to the product, which is described by the principle of the value chain by Porter (1990).

**Acquisitions**

Among the strategies used by firms to gain size and generate competitiveness, there are activities such as the purchase of a company by another, also known as acquisition, whose cause according Zozaya (2007), is mostly facing threats or seize market opportunities.

According to Abellán (2004), the combination of interests of the various actors involved in the management of the firm can lead to be chosen by the strategy of a merger or acquisition. At company level, acquisitions often have significant impact on variables to determine the success and value of the firm, such as employment, stock price, market power, profits and / or profitability, growth rate, productivity and technological performance.

**Intangible assets**
In business management, intangible assets were introduced in the late 90's by Richard Hall. Intangible assets can be understood as business factors represented by an idea or knowledge that can drive the organization into positions where it is possible to achieve competitive advantages. In this respect, contributions like Itami (1991) consider organizational intangibles by way of invisible assets, the relevant factors such as technology, brand image, consumer confidence, organizational culture, and management capabilities.

Tissen et al (2000) conceived of intangible assets through business skills that allow them to generate sustainable competitive advantages, arguing that the proper management of these skills can create economic value for the firm. While Lev (2001), refers to intangible assets as assets arising from knowledge, Kaplan and Norton (2004), understood as determining factors for achieving the strategic objectives set by the companies.

While, according to the different views of these assets, it is difficult to define a single approach, it can be possible to steer it in three main groups common to any corporate entrepreneurship:

- Human capital includes skills, attitudes and aptitudes of firm personnel.
- Organizational capital includes items related intangible knowledge held by the company from its daily management.
- Relational capital includes the status of relations of the firm with its stakeholders.

Based on the diversity of ideas described above, from positions such as accounting, strategic, knowledge management, information technology and human resources, it is noteworthy that all relate to the concept of intangible assets, knowledge and intellectual capital.

**Intellectual capital**

In terms of strategic management, a pioneer in promoting the concept of intellectual capital was Stewart (1991), who referred to this concept considering the sum of elements of the human factor in the company, able to provide a competitive advantage market. In this regard, Edvinsson and Malone (1997) refer to intellectual capital by way of knowledge that can be transformed into inventions, technologies, processes and software, providing added value to the company. Meanwhile, Hand and Lev (2001) refer to this concept, by its origin from three main areas, innovation, organizational practices and human talent.

Thus, according to various theoretical approaches, it can be identified that the terms of intangible assets and intellectual capital are often used interchangeably. However, it is prudent to mention that the existence of intangible resources not necessarily refers to the intellectual capital of the firm, since it is usually considered only the culmination of the management process, determining even the generation or destruction of firm value.

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**Generating business value**

According to Mandel et al (2006), over 50% of the market value of the companies in the Fortune ranking of 500 is made up of intangible assets. Therefore, most of the wealth and growth in developed economies are due to intangible asset management. In the field of business, to determine the value of a firm is one of the great challenges, this due to the nature of the resources and liabilities intangible, difficult to quantify objectively in the financial statements.

Barney (1991) considers the resource-based view and the business capabilities of intangible resources of the firm, which can create competitive advantages and thus create value for the company, provided that:

- The resource provides financial value to the organization,
- Only some organizations have, that is, there are few,
- The resource is inimitable, and
- There are no substitutes on the market.

Thus, it is possible to attribute a monetary value to the competitive advantages of the firm, since this process represents a quantifiable measure of the value recognized by investors.

**Business reputation**

In the organizational sense or at firm level, Fombrun (1996) mentions that reputation is an intangible asset of companies that represents the identity and transmits signature hallmarks by which succeeds in changing behavior of their stakeholders. Therefore, the degree of perception of the name of the firm, having customers, investors, suppliers, creditors, employees and the general public are called organizational reputation. Thus, the institutional reputation refers to the way in which external agents conceive of corporate reputation, i.e. how they see, hear and opinions regarding the target company, either locally or internationally. According to Villafañe (2004), it is possible to identify three organizational dimensions around the concept of reputation:

- Axiological dimension: Within which it incorporates the cultural values of the organization, corresponding for the ethical question about the relationship with third parties and being a socially responsible company,
- Corporate dimension of service: In which are included commitments arising in the course of time in relation to the key players, and
Management corporate dimension: Corresponding to the proactive attitude.

According to Costa (2004), reputation arises from the history of the company, on the credibility of its organizational objective and the means to achieve this goal by making use of resources such as corporate culture, based on the recognition that the company makes of its identity.

Factors influencing construction business reputation

While organizational reputation represents a certain strategic value to the company, the difficulty of it lies in measuring the impact it creates in every organization. Hillenbrand and Money (2007) raise some reputational models about the analysis of such an intangible asset, emphasizing the theoretical and conceptual foundations for the various interest groups, whose value appreciates or it is lost over time. Fombrun (2001) proposes five basic principles to generate organizational prestige:

- The principle of differentiation: Positioning in the minds of the stakeholders.
- The principle of concentration. The clear focus of the actions and communications on the subject of interest from trading.
- Principle of consistency: The integration and coordination of organizational initiatives, to involve stakeholders.
- Identity principle: Carry out a performance, public or private, in accordance with the principles and values that govern the existence of the organization.
- Principle of transparency. Maintaining strong levels of communication with stakeholders, and the people in general over the daily management of the organization.

Meanwhile, Villafañe (2004) refers to the need for hand social interests and business on maximizing profits for reinvestment. Business viability depends on factors such as ethics and sustainability. Corporate reputation then is measured by:

- Financial economic results.
- Quality of commercial offer.
- Corporate culture and work quality.
- Ethics and corporate responsibility.
- Innovation.
- Global dimension and international presence.

While the principles of reputational assets is about building conceptual parameters that allow the perception to be forwarded to the stakeholders, factors refer to specific quantifications that determine the levels of perceived reputational to keep stakeholders.
Technological innovation

According to Moreno (1985), innovation is understood from the definition of technology. It is described from the use of knowledge to produce goods or provide services. However, in the theory of innovation there are two main approaches conceived. One is tracked to the technical question in which tangible objects encompass a humanistic approach that relates to the transformation of objects for the benefit of mankind, for meeting the needs of the population, as well as greater control over the environment.

According to Escorsa (2003), technological innovation focuses primarily toward obtaining results, mainly characterized by:

- Having a novelty character to satisfy the needs of the population.
- Include the introduction of a technical change in products and services.
- Provide a socially visible utility.

Similarly, according to Pérez (2005), technological innovation can be seen as a process that starts from an idea, based on the identification of a need for the development of a product or service commercially accepted.

In an innovative approach to processes, the strategy of "Technology Brokering" and building social capital, whose main exponent is Hargadon (2003), argues that technological innovation is related to the social metaphor of Burt (2000), who proposes that the social structure is a type of capital that creates a competitive advantage to achieve the goals set by groups or individuals. However, the change in scientific development and application of techniques for the generation of technologies with commercial validity, involves a series of steps that interrelate with other activities incurring in vanishing points that encourage interconnections.

Contextual framework

While almost since the origin of mankind, according to Delgado (2006), biology through a series of processes and mechanisms of trial and error has been used as a tool to transform nature by various techniques. With respect to agricultural development, the contribution of Mendel's laws set the tone for the selection process improvement and subsequently crosslinking "manual" between compatible species bringing hybridization (Bisang et al, 2009).

According Solbrig (2004), invention and idea of carrying out the modification of the characteristics of living organisms for specific purposes of the interest is shown and technological development for thousands of years.

Since the application of biotechnology in the production focuses on natural resources, it is
important to highlight the significant competition in innovation and scientific complexity that generates about the universe framing the technological development and taking shape in a small number of companies that generate these advances, such Monsanto is the case. In that perspective, though, the transnational of Missouri was founded in 1901, its expansion began in 1928 through the acquisition of companies in the chemical and textile industry. It was until 1981 when it established as a focus of biotechnology research and in 2000 it achieved consolidation dedicated exclusively to the agrochemical industry.

Today, according to Pérez and Medina (2008), Monsanto has over 14000 employees and has presence in countries on five continents, including: Argentina, Germany, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Ecuador, France, Greece, Guatemala, Honduras, Hungary, India, Indonesia, Ireland, Italy, Japan, Jordan, Kenya, Korea, Malawi, Malaysia, Mexico, Netherlands, new Zealand, Nicaragua, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Senegal, Singapore, Slovakia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, Uganda, Ukraine, United Kingdom, United States, Venezuela, Vietnam and Zimbabwe. As in most of those countries where environmental advocacy groups are leading protests and demonstrations by countless violations on genetic manipulation of natural products (transgenic), loss of biodiversity, market monopoly, violation of food sovereignty movement and displacement of peoples and land concentration, among others, are leading campaigns on the history and impact of the company.

**Method**

In the present study, it was conducted a review of novel electronic materials and critical of the current situation of the company, supported by a qualitative analysis of the main theoretical approaches that explain the behavior and strategies taken by Monsanto.

**Analysis of results**

The global expansion strategy has allowed Monsanto to seize food problems of the population, taking into account their strengths and favorable conditions obtained from experience by acquiring other companies and integrating both vertically and horizontally organizations on five continents, transforming key processes and providing technology. The growth and expansion strategy that Monsanto has been characterized by allying with dubious companies like Coca-Cola than in Asian countries is called "toxic-tail", accused of selling harmful products that cause cancer and poison people, water and earth. The NutraSweet Company is in the segment of carbonated beverages that produce carcinogens. Calgene, Inc., a leader in plant biotechnology, and Dekalb Genetics Corp., the second largest producer of seed corn "improved" in the United States, or by dubious good intentions by buying business-oriented organic seed production.

The human health problems and environmental pollution arising from the errors in products and
processes have evolved in reliability problems to the company, expressed through a series of contingencies that discuss the positioning and consolidation of quality in biotech innovations Monsanto. While social controversies and conflicts of value arising on the development of the company are the result of the interests of various groups: scientists and technologists, entrepreneurs and investors, farmers, politicians, and citizens in general, have led to important and significant ethical judgments and mobilizations against transnational, based mainly on how to operate the company.

The main accusations against transnational include human rights violations and ancestral rights of indigenous peoples, compulsive evictions, unlawful coercion, murder, looting of commons, destruction of the territories where they operate, destruction of native forest, effects on the health of populations, impacts on local sovereignty, national and popular, violation of labor rights, concentration, privatization and foreign ownership of land. According to Proceso de Justicia Popular (2012), as demonstrations against such activities, the multinational has had to face a number of complaints and prosecutions carried out around the world, such as:

- The complaint filed by the association Eaux et Rivières de Bretagne in 2001 by announcing that its Roundup product was efficient and had no risks for the environment.
- The complaint by the residents of Anniston (Alabama) in 2002, for polluting the water sources of the village with the chemical PBC.
- A lawsuit in 2004 for 350 million dollars for the use of aspartame in their sweeteners despite its toxic effect to the brain.
- A complaint in 2004 in Andhra Pradesh by the use of infants in "horrendous conditions" in cottonseed fields.

As a protest, in order to manifest and protest against the company, there have been several demonstrations and popular resistances.

- The campaign in Mexico: "Without corn there is no country" ("Sin Maíz no hay País") firmly rejects GM maize, and advocates for the defense of the Mexican countryside, protection of Mexican corn, food sovereignty and the reactivation of the Mexican countryside.
- The campaign led by the Peasant Association Scimitar River Valley (Asociación Campesina del Valle del río Cimitarra). "Monsanto Mata" in Colombia.
- The Campaign in Latin America, "Latin American Network for GMO-Free" ("Red por una América Latina Libre de Transgénicos"), to declare the Andean region, the center of origin of potato, transgenic potato free.
The network of civil society organizations and people's movements lead the "Campaign for a GMO-Free Brazil" ("Campaña por un Brasil Libre de Transgénicos").

Global Protest against Monsanto on behalf of more than 200,000 people in 40 countries on May 25, 2013 by the indignation of the inaction of the governments to the detrimental effect with GM products and their production without any impediment.

By way of response, Monsanto has directed its strategy faking transparency through the "green washing", whereby attempts to convince the public that favor the preservation of the environment, and convincing politicians that their activities are popular support.

**Conclusions and recommendations**

Due to the larger social interest in reducing risks to the environment and human health, the relationship between society and techno-scientific power further conflict, has become controversial. The controversies generated around innovations in the development field denote that the industrial model characterized by ignorance and little or no participation of the society in which only the evidence of damage already caused to health or the environment is a cause justifiable for the modification or withdrawal of such technological inventions, is no longer adequate.

Given the technological development, issues such as prevention and accountability represent moral obligations by Global Bioethics, so that genetic modification seen as a cultural intervention must be assessed in context. Despite laundering strategy that manages Monsanto responsible image, the bad reputation that characterizes it, along with the increasingly encourages rejection information available to the company and the products it develops and produces.

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