

Two Sides of the Same Coin?

Analysis of the Web-Based Social Media with Regard to the Image of the Agri-Food Sector in Germany

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ABSTRACT

Never before has food been as safe and secure as it is today, but simultaneously, society has become increasingly critical towards agricultural and food related issues. This two-sided development between society and agribusiness will be analyzed using Framing Theory. A quantitative semantic analysis was applied to evaluate the web-based social media in Germany. 50,931 web posts were collected covering 21 issues identified as relevant for the agri-food sector. The results show that all contentious issues are mainly framed in a two-sided way. The modern productivity-driven industry is judged as a negative development, trends returning to a more natural food production are seen as positive.

Keywords: agri-food industry, framing, image, issue management, social media

1 Introduction

Every year, the German office of Greenpeace publishes a report about pesticides in food (Greenpeace, 2010). With each campaign against pesticides, they were able to attract a lot of attention from the media, and even the big retailers were forced to reduce the pesticide limits of their suppliers. Greenpeace had the ability to provoke a situation, in which the professionally tested legal limits have no importance in the market anymore (Lebensmittelzeitung, 2007). As a result, a lot of agricultural distributors have to deal with much stricter limits for their (fresh) food deliveries to the retailers.

Such campaigns are intensified today by an increasing use of the internet, especially the social web. As described before, Greenpeace for example not only uses public actions and co-operations with the classical media to promote their campaigns. Nowadays, this comes along with a sophisticated web campaign that includes information on their websites, their own blog and a multitude of links to social networks with their own Greenpeace groups. This gives join-in actions and calls for boycotts more dynamic and power, which involves new challenges for the agri-food industry.

Likewise, other parts of the food sector or single companies are faced with dynamic online-dominated campaigns that could evolve to serious crises in the future. The whole meat sector for instance is caricatured by an initiative called 'The meatrix', which criticizes modern intensive animal husbandry and is linked to several online networks like Facebook or YouTube (Grace and Free Range Studios, 2010). Also multinational food processing companies such as McDonalds or Nestlé are in the focus of campaigns and especially blamed for deforestation in developing countries. Nestlé was lately (spring 2010) confronted with a spot, produced by Greenpeace and published in web-based social media, criticizing the use of palm oil. Since the exploitation of palm oil is regarded as unsustainable, the habitat of orangutans is being cut down according to Greenpeace. In the spot a man is shown unwrapping a Kitkat candy bar and eating the

finger of an orangutan until blood is running out of his mouth (Die Presse, 2010). Since 2006, McDonalds' business practices are parodied in an online game, in which users run their own McDonalds and have to deforest and trick consumers to keep the whole business running (Molleindustria, 2006).

More than other industries, the agri-food industry is confronted with the problem that critical issues are increasingly becoming the focal point of public discourse. 'Mass animal husbandry', 'tainted meat' or 'genetically manipulated food' are only a few phrases describing the lack of public acceptance of this sector (Albersmeier, Spiller, 2009; Boehm et al., 2009; Feindt et al., 2009).

In order to analyse which issues concerning the agri-food industry are in the spotlight of public interest and which resultant frames can be observed, an empirical analysis of the social media as a mirror of German society is applied. Thereby, weblogs and web discussion forums were explored based on predefined keywords covering 21 topics of investigation such as Animal Welfare, Food Safety, Food Related Scandals, Food Additives, etc. The aim is to cover the broad challenges of the agri-food sector over the past two years to identify critical points of the image of the agri-food industry and to implement modern communications management to improve this image.

First, a summary of the image of the agri-food industry in Germany and the main drivers for this development is given. The second part outlines the definition of web-based social media and their increasing relevance for public communication (Zerfass et al., 2010), and therefore likewise for further research. Especially consumer research questions can be evaluated in an unbiased way and thematic questions in a non-journalistic environment - both in a short period of time. This part is followed by an overview of the theory of framing and the framing process used in this study as well as the development of the adjusted theoretical construct of a two-sided framing in the agri-food sector. In the results, the formal criteria of the social media communication and the framing analysis are presented. This is followed by a discussion of the results and a brief summary, focusing on the outcomes for the agri-food industry and for politics, as they are faced with a new communication platform, which is developing dynamically and able to highlight new agendas 'over night'. This will force governments and the food chain members to build up a systematic monitoring and to implement their own wording/framing in the web against other stakeholders to participate in the ongoing discussions. Otherwise effective and efficient communication and image building is almost impractical.

2 Image of the agri-food sector in Germany

The agricultural and food producing sector has undergone an unprecedented development in the past few decades. Particularly as a result of new production-related technologies, agricultural yields have kept pace with the constantly increasing world population. In Germany, for instance, the average farmer in the 1950s was able to feed ten people; in 2008 this figure was 148 (DBV, 2009).

Thus, the fact that a large proportion of the 6.8 billion people on earth today suffers from hunger is more an issue of distribution than one of production capacities. Today, where "milk lakes" and obesity are more familiar to Western populations than food rationing and malnutrition, questions of food security have largely lost its relevance in recent years. Even though people might appreciate the achievements of the industry, their requirements continue to grow (Spiekermann, 2008). Protests against intensive animal husbandry and the cultivation of genetically modified crops or the growing consumption of organic products are only a few examples of this tendency. Combined with a lack of knowledge of and proximity to the agri-food industry ('Estrangement'), the demands of society or at least several groups are in opposition to the attempts to increase the efficiency of the sector (Lang, Heasman, 2004).

In Germany, the structural change in the agri-food industry over the past few decades has coincided with the loss of the agricultural character of the country in particular. One hundred years ago 38 % of the labour force was employed in agriculture; currently the proportion is about 2 %. This development is accompanied by a reduction in the number of farms, but the average size has increased. Only in the past ten years has a loss of about 35 % of farm holdings been recorded (DBV, 2009).

This implies an increasing alienation of society from agricultural and food producing topics. As a result, the general level of knowledge in this field is low, particularly in major cities where people widely lack contact to the rural areas. Primary school children in the city of Berlin believe that pigs are solely fed on grass (82 %) and only 10 % know what sugar comes from (Essmann, 2001).

In addition, this lack of connection to agriculture has effects on the image of the agri-food sector whose image can simply be defined with the question of 'how is this sector perceived?' (Aaker, 1996). While farmers themselves are held in high esteem and are often associated with a picturesque country life, other parts of the whole supply chain, especially the meat producing chain, have a poor reputation (DBV,

2009; Albersmeier, Spiller, 2009; cf. Figure 1).

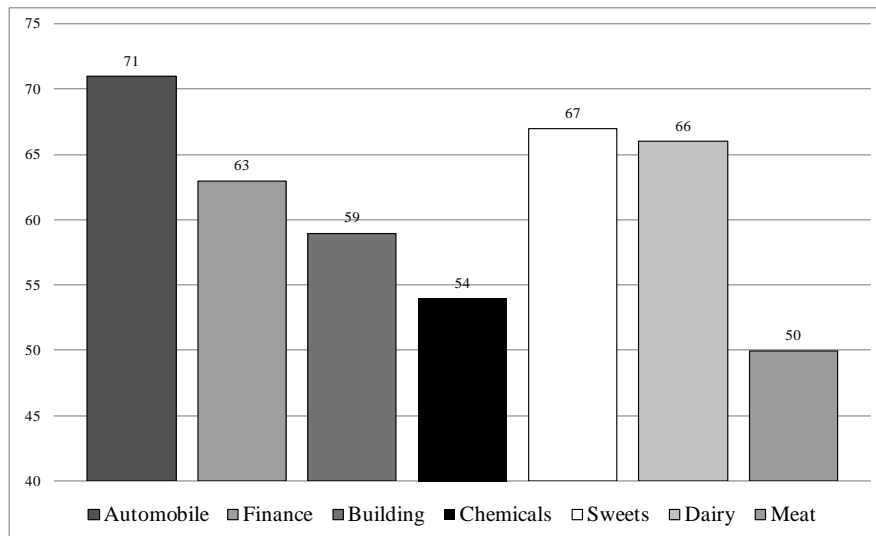


Figure 1.
Reputation of different industries (consumer survey; scale from 0 to 100)

In order to analyse which issues with regard to the agri-food sector in Germany are discussed in the web-based social media and how they are evaluated, the present analysis utilizes the framing concept to compile a super ordinate structure.

2.1 Theoretical background: Web-based social media

For modern communications management, the above mentioned structural change in public communication on the internet (social media) involves new challenges and likewise new opportunities. On the one hand, from the companies' viewpoint the possibilities to shape public opinion are, in comparison with classical sender-orientated comprehension of communication, hindered. However, on the other hand, this participative web technology offers the opportunity to obtain early insights into newly evolving topics which might later become increasingly difficult to manage. In order to benefit from this dynamic communication, the establishment of a systematic internet monitoring system is necessary. This allows the recognition of relevant issues at an early stage so that communication strategies can be customized accordingly. Besides communications management, the social media enables alternative forms of product development, production and distribution (Zerfass, Sandhu, 2008).

Social media, also known as Web 2.0, illustrate - besides new specific technologies or innovations - primarily a modified perception and use of the internet. Basically, the idea of social media can be defined by two fundamental characteristics: (1) the possibility of creating or co-composing one's own web content and (2) the usage of the internet as a public communication platform (Gerhards et al., 2008). Contrary to classical centralized sender-oriented communication, users are - thanks to interactive applications - able to generate, work on and distribute content themselves. This implies a new hybrid form of simultaneous production and usage, the so called 'produsage' (Bruns, 2007).

As a research instrument, web-based social media are suitable for giving a general impression about public discourse towards diverse issues and can be seen as a mirror of society. In Germany, 67.1 % of the population uses the internet, and the trend is continuing, since already 96.1 % of the 14 to 29 year olds are online. Especially highly educated male users are disproportionately represented (Bitkom, 2010). This development implies a simultaneous increase of web-based social media users (ARD/ZDF Medienkommission, 2009). Furthermore, social media allow profound impressions due to their frankness, their network character and their interactivity. As opposed to traditional surveys for example, the active user reveals a plethora of information about his opinions, attitudes, preferences and criticisms without concern of social expectations (Schenk et al., 2008).

In this context an imbalance of the frequency of positive and negative posts, particularly in discussion forums, can be presumed. According to consumer research, it can be seen that critical opinions are communicated twice as frequently (or even more often) as positive experiences or attitudes. The motivation for taking part in a discussion is higher if a user is displeased than if he is pleased with a

certain situation (Kotler et al., 2007; Hansen, Jeschke, 1995).

This analysis concentrates on two applications of social media: web discussion forums and weblogs. Discussion forums are characterized by the participation of several users sharing opinions or knowledge, whereas a blog (short for weblog) is a website managed by a single person (blogger), who journals his thoughts and ideas about a particular subject. As the name 'weblog' – a composite of the words 'web' (world wide web) and 'logbook' – describes, many blogs are personal diaries detailing someone's experiences in life. As opposed to discussion forums, the blogger controls the content of the postings: visitors may comment on the content but usually only read the latest news of the blogger (Kaiser, Mueller-Seitz, 2008).

Web-based social media are a new evolving communication channel which is slowly coming into the focus of agricultural science and industry. In future it will be one of the main sources of unbiased information on relevant public issues. In the following, the Framing Theory, which builds the research framework of this analysis, is presented and transferred to these relatively new forms of public communication.

2.2 Research framework and methodology

In communication science, interpretive 'frames' are considered a part of three interlinked models – 'priming', 'framing' and 'agenda-setting'. They have been developed in research as approaches to explain the effect of media on all kinds of groups, and vice versa (Scheufele, Tewksbury, 2007). In media-effect studies, a branch of communication sciences, 'agenda setting', 'priming' and 'framing' are differentiated from one another:

"Agenda setting and priming research stipulate that story selection can alter audience judgments by shifting the odds that particular issues will come to mind easily. Consequently, audience estimates of issue importance (in the case of agenda setting) and approval of public actors (in the case of priming) are affected. Framing research proposes that media messages, by emphasizing some aspects of a problem rather than others, can put people in mind of very different considerations when they contemplate the matter and form opinions about it." (Price et al., 1997)

Overall, however, no definitive and comprehensive definitions and delimitations for these terms have been established (Ghanem, 1997; Scheufele, 2003; Willnat, 1997). Depending on the approach, framing is seen as the main principle that is complemented by agenda-setting. The cognitive model of Price et al. (1997) is frequently used as a basis for the study of frames (Chong, Druckman, 2007).

All three theories of media effects would be suitable for analysing the perception of the agricultural and food producing sector. However in the anonymous Web 2.0 with a culture of nicknames, the evaluated priming of the users would only preserve very limited evidence about an overall perception. The multitude of different forums and blogs handicaps the evaluation of all relevant agendas in the sample period. Though, the theory of framing as a theory of medium range (Dahinden, 2006) allows the evaluation of the perception with a limited selection of agendas with all types of users included. Additionally, framing mainly relies on the wording of articles and posts, that enables a quantitative analysis with software-based semantic methods.

Framing Theory

The Framing Theory has its origins in media research analysing possible effects which bias information in mass media. It is presumed that classical public consciousness has given way to a media consciousness in which journalists function as 'gatekeepers'. Based on media specific factors, they are the ones selecting which information will be published as news and which will never reach the public. Awareness of the power of the media to interpret issues in the public consciousness leads to competition among various actors to dominate this channel as spokesperson in order to promote their own interpretation. To this end, actors follow rules of the media (Gerhards et al., 1998). For communication through social media the described limitations are of minor importance. As described before, everybody is hypothetically able to publish news, information and opinions, but even in the breadth of the web, the coverage is limited by the authenticity and the credibility of each user and/or source (Pleil, Rehn, 2010).

However, media coverage is not only shaped by the attempts of the societal actors to exercise influence, but also through the concentration of the reporting on selected interpretive patterns. These patterns are termed 'frames' in the more recent media research (Druckman, 2004; Entman, 1993). In many cases frames are used that limit room for interpretation in the public domain through the compaction and simplification of structures (Christmann, 1997; Dombrowski, 1997). Frames emphasize certain aspects of a subject and thus provide a model for the selective perception of complex topic areas. Accordingly, they

allow individuals as well as organizations to quickly come to terms with complex problems and with

manifold information (Snow et al., 1986).

This perception is likewise relevant for social media, since the communication model for web-based communication still relies on a sender-recipient situation which gives the sender the chance to reduce the complexity of a certain issue. Due to this fact, framing is also possible in social media particularly because no 'professional' authority like a journalist tries to verify the posts.

Framing Process

As remarked in the preceding chapter, Framing Theory has until now concentrated on the evaluation of frames in the (print) media (Dahinden, 2006). However, recipient frames have also been investigated in various works (Graber, 1984; Hornig, 1992; Iyengar, 1991; McLeod, Detenber, 1999; Dahinden, 2006), that Scheufele (1999) linked to media frames in his model of the framing process. In this process he distinguishes between 'inputs', 'processes' and 'outcomes', as well as the two levels of media and audience, or recipient (see Figure 2).

Inputs on the level of the media are objectives and ideologies, but it is also the norms of the journalistic profession (Scheufele, 1999) that determine how news is framed. The resulting process of 'frame building' is carried out solely by the journalists and/or the producer of the content. It is restricted by the fact that press releases have already been preframed for the relevant groups, and journalists/producers can therefore no longer treat these sources of information as fully neutral (Dahinden, 2006). Grossenbacher (1986) also talks in this context of the reframing of press releases: in this orientation phase it begins firstly with an opinion forming process of frame building (Scheufele, 1999). Scheufele (2003) attributes a time span of about 14 days to this phase during which particular frames establish themselves. This is followed by the routine phase in which the formed frames are modified and possibly also extended whilst overall staying relatively stable (Gerhards et al., 1998).

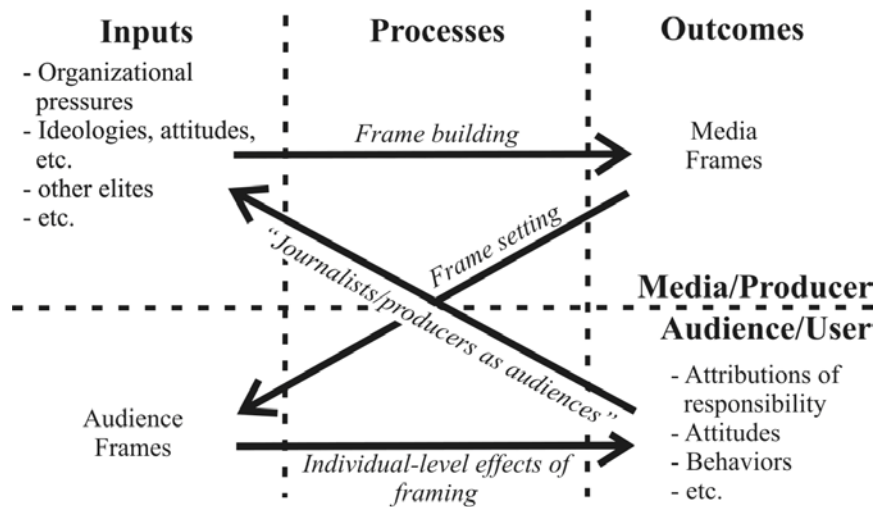


Figure 2.
Framing Process
(Source: Modified according to Scheufele 1999)

Once this process has been completed, the established 'media frames' or media content frames are communicated to the recipients/users (Scheufele, 1999). Whether they perceive the media frames as their own opinion is heavily dependent on whether the specific frames are perceived as salient and important. Only when it comes to an adaption the frame is subjected to individual classification adjusted to personal attitudes and points of view. This modified or adjusted frame is then in turn regularly communicated by the recipient/user, and thus sooner or later reaches the journalists/producer once more as new external input (Gerhards et al., 1998) or is directly communicated through one's own social media source. Hence in the social media, the classical framing process is more like a network of users and producers who confront each other with their personal frames.

Even though the Framing Theory is based on a classical sender-orientated understanding of media, it can also be transferred to the analysis of social media, presented in this paper. Due to the characteristic that a recipient of social media can be user and producer of contents coevally (Gillmor, 2004), we have to deal with media and recipient frames at the same time.

2.3 Frames 'Productivity' and 'Naturalness'

As described previously, the (German) agri-food industry is confronted to some degree with a bad reputation and a growing lack of knowledge about food production by the consumers. The improvements in efficiency and productivity that have been achieved in the last century are not sufficient to satisfy the consumer and regarded more as a loss of tradition and naturalness than as a gain in quality due to improved food safety and hygiene (Siebeck, 2010). Organic products, GMO (Genetically Modified Organisms)-free food and free-range animal husbandry are only a few of the new alternative developments in the food chain underlining this tendency (Busse, 2006).

These trends indicate a split into two opposing paradigms (Lang, Heasman, 2004) that communication about agricultural and food related issues could be based on. In classical media as well as in social media, journalists and producers frame 'alternative' methods of production with different attributes than 'conventional' methods, which are named in the following as the frames 'Naturalness' and 'Productivity'.

This paper targets the categorization of the obtained social media posts on the predefined topics of investigation to the frames 'Productivity' and 'Naturalness' on the basis of their structure as regards content. Thereby, also the displayed tonality is considered so that finally a classification in the following matrix (Figure 3) is possible.

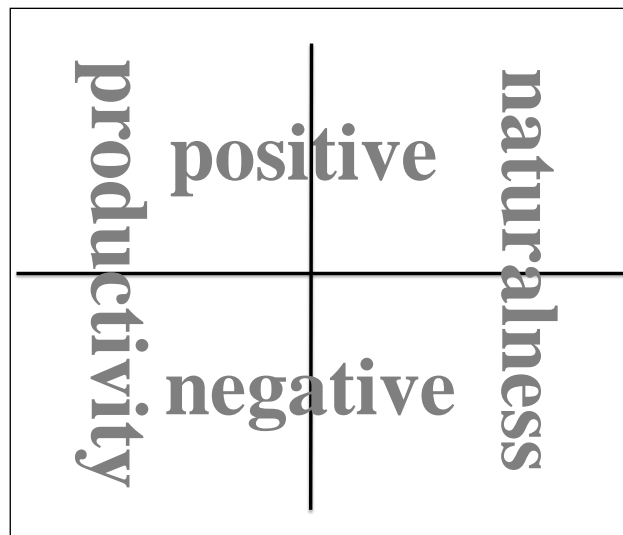


Figure 3.
Framing-Matrix

3 Research design

In the last decade, the number of social media sites on the internet has rapidly grown and the communication has changed from a technical focus to a discourse about all relevant issues in life. In Germany, the web-based social media content on food and beverages only has a share of 2.3 % of all blogs (Fank, 2009). Although 21 issues could be identified in an explorative prestudy, in which the search engines 'http://blogsearch.google.com/', 'http://technorati.com' and 'http://www.blogpulse.com' were used to identify keywords that deliver enough relevant posts. These issues were characterized by up to 72 keywords* per issue and therefore were broad and newsworthy enough for the analysis:

* Limited (e.g. mass production if meat) and unlimited (e.g. 'Meat-Mafia') keywords were used in this study.

Agricultural Lobbyism, Agricultural Policy, Agricultural Structure, Agriculture and Climate Protection, Agriculture and Environmental Protection, Agri-Food Company Names, Alternative Animal Husbandry, Country Life and Agriculture, Crop Protection, Farm Animal Welfare, Food Additives, Food Prices, Food Related Scandals, Food Safety, Genetic Engineering for Agriculture, Industrial Agriculture, Milk Strike, New Breeding Methods, Renewable Resources, Traditional Breeding and World Food Affairs.

On the basis of these issues, the framing concept of 'Productivity' and 'Naturalness' will be analyzed in the following. For this, the posts containing at least one keyword were extracted from the internet. In cooperation with the private market research company for social media 'VICO Research & Consulting GmbH' the whole German-speaking social media community on the internet was scanned and the relevant posts were automatically saved and categorized.

Here, VICO used a two-step method, where firstly all relevant web sources were located and secondly all relevant posts are extracted from their sources, providing a data set with the following variables for the semantic analysis:

Date, content of the post, title of the post, title of the forum discussion (only forums), name of the community, type of community, type of issue.

This data set then was purged of irrelevant posts by hand and finally 50,931 posts remained: 47,427 posts in discussion forums and 3,504 posts in weblogs. The time period of investigation for the blogs was limited from January 2009 to August 2009, while the time period for the discussion forums was from July 2007 to August 2009. The difference between the two lies in the variation of the accessibility of the web sources, because blogs are usually not managed as professionally as forums and exist for shorter periods of time. Thus, all time series analyses are only based on the forum posts.

The next step was the integration of the data in the semantic software tool 'SPSS PASW Text analytics for surveys 3' which is able to detect single words and their synonyms as well as semantic terms (e. g. adjective + noun). For this only a random selection of 10,000 posts was used because of a limitation of IT resources. In a qualitative evaluation, the surrounding texts of the terms were reviewed to group and assign them to one of the four blocks in the framing matrix.

4 Results of the social media analysis

4.1 Formal criteria of the social media communication

The relevance of social media continues to grow, as increasing numbers of users exchange their views in discussion forums and blogs. In the case of food and agriculture related issues the posts per week rose consistently from 300 posts in forums in the middle of 2007 up to around 700 posts in the middle of 2009 (cf. Figure 4), whereas the course of growth was quite heterogeneous. In holiday times during summer and around Christmas the intensity was quite low (<200), while when issues were discussed in the classical media, the intensity rose to over 1,000 posts per week. In 2008, the discussions about high food prices and hunger in developing countries in the springtime and in 2009 the ban of the GM-maize MON810 by the German agricultural minister (also in spring) were the most discussed events in the social media.

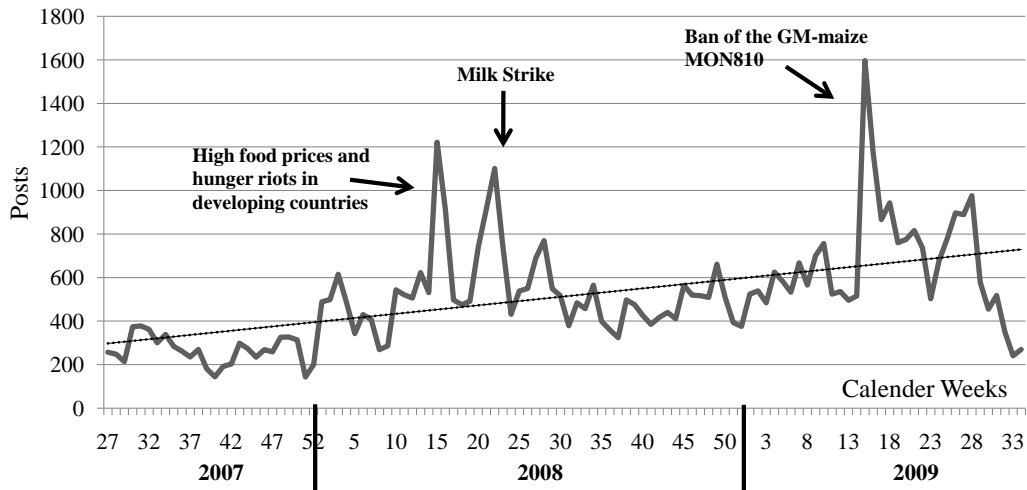


Figure 4.
Course of communication about food and agricultural issues in discussion forums

The top 5 issues of the last two years were Renewable Energy, the Agricultural Structure in Germany, Genetic Engineering for Agriculture, Industrial Agriculture and Farm Animal Welfare (with 40,424 hits[†] by themselves, which are almost two-thirds of all hits; cf. Table 1). Especially the three issues, GMOs, Industrial Agriculture and Animal Welfare, are of special interest, because they have been discussed by the German public for years; and the proponents and opponents are irreconcilably opposing each other. Each group has its own framing of the issues and tries to position it in the public (web) discourse.

Table 1.
Total hits per issue

Issues	Hits (total)
Renewable Resources	10,026
Agricultural Structure	9,261
Genetic Engineering for Agriculture	9,126
Industrial Agriculture	7,772
Farm Animal Welfare	4,239
Food Related Scandals	3,215
Agricultural Policy	2,668
Crop Protection	2,622
Food Prices	2,248
World Food Affairs	2,059
Alternative Animal Husbandry	1,809
Country Life and Agriculture	1,514
Food Additives	1,460
Agriculture and Environmental Protection	1,370
Food Safety	1,055
Agri-Food Company Names	728
Agricultural Lobbyism	610
Agriculture and Climate Protection	570
Milk Strike	181
Traditional Breeding	181
New Breeding Methods	89
SUM	62,803

[†] A differentiation between posts and hits has been made, because especially blogs sometimes target two issues in one post. That is why in the data set there are 23 % more hits (62,803) than posts (50,931).

4.2 Results of the Framing Analysis

In the analysis it was possible to allocate 35.8 % of all posts to at least one frame type and 6.1 % to more than one, whereas particularly weblogs tend to address more than one frame. This left 64.3 % of all posts unallocated, as they were lacking specific terms that indicate a special pattern of interpretation.

As a result of consumer research and especially customer satisfaction research it could be hypothesized that the motivation to write a post is primarily negative, so the web discourse is usually dominated by critical opinions. This situation could also be found in the web discourse about the agri-food sector.

Most of the posts framed agricultural and food-related issues with a negative opinion on the frame 'Productivity' with 63 % of all four specifications (cf. Figure 5). These posts are characterized through negative connotations about GMOs, animal husbandry, and unhealthy food and living habits induced by the agri-food industry (cf. Figure. 7). A positive framing of the benefits of the agri-food industry is much less frequent with only 9 % and characterized predominantly through economical terms.

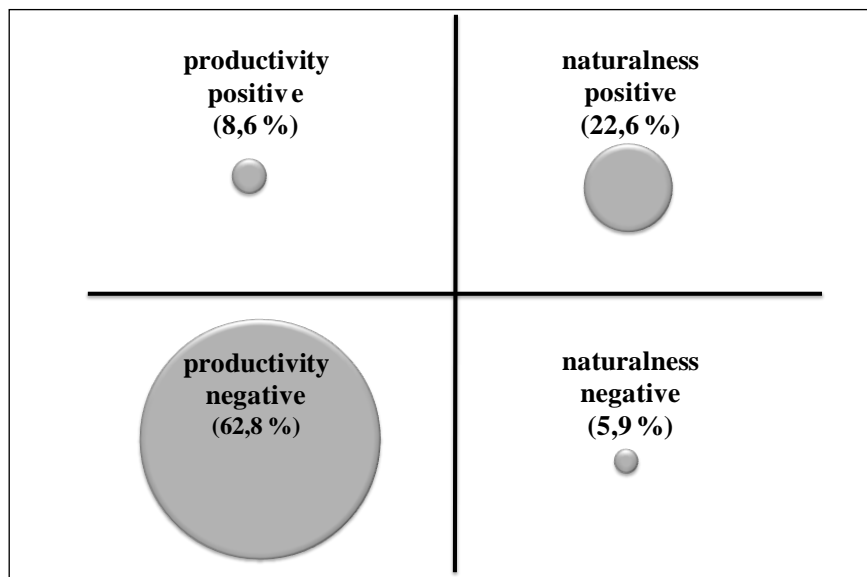


Figure 5.
Allocation of the different frame-types

Concerning the frame 'Naturalness', the situation turns out to be exactly the opposite. Here the positive aspects are mostly stated (22 %) with components that reflect an organic and animal welfare orientation. Negative perceptions of 'Naturalness' are only represented with 6 % and based mainly on economical connotations and terms concerning hunger.

Yet, the framing of the agri-food sector has a likewise dynamic development. In Figure 6 the four frames are displayed in their progression over the two years of the sample period. As described before, the different frames are quite stable over time and only show minor changes. But in the spring of 2008, the rejection of productivity declines in April, May and June (std. residual: -4,3, -1,8, -2,2) as well as the compliance with naturalness in April (std. residual: -2,4), and the compliance with productivity increases in May (std. residual: 2,9) as well as the rejection of naturalness in April, May and June (std. residual: 2,4, 2,5, 2,8). Here, the stable framing of the industry breaks up, while at the same time food prices rose and hunger riots spread all over the world (e.g. Haiti and Mexico). Though, after this short discontinuance, the old balance stabilized again.

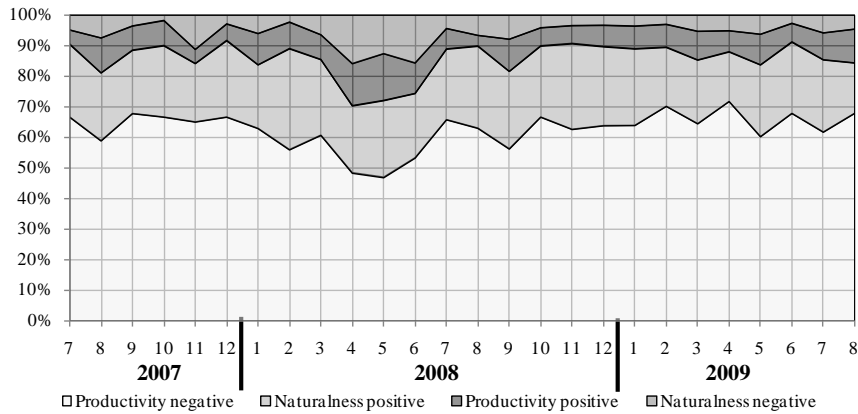


Figure 6.
Progression of the frames from 2007 to 2009

The major components of the four blocks are summarized in Figure 7. They show that the discourse about food and agricultural issues has fundamental lines of conflict. The economic consequences of modern, productive and efficient food production versus the traditional, sustainable and animal friendly ways are the interpretative patterns, which are cumulated in the positive frame ‘Productivity’ and the negative frame ‘Naturalness’. These two frames appear 49 times in posts (expected value 9; std. residual 13), which indicates a strong coherence. On the other side, the ethical, moral and environmental effects of these two types of food production are in the focus of the discourses cumulating in the frames ‘Productivity’ and ‘Naturalness’. Here also a high coherence is discovered with 394 posts containing both frames (expected value 257; std. residual 8.5), while the two other combinations only have standard residuals of 2.3 (P neg/N neg) and 5.8 (P pos/N pos). So the ‘coin’ has economical effects on one side and plurality of moral, ethical and sustainability effects on the other †.

P o s i t i v e		
P r o d u c t i v i t y	Effective (42) High yields (35) Economical (33) No hazard (29) Cheaper meat (23) Large farm (17) Modern agriculture (14)	N a t u r a l n e s s
	Free-range breeding (65) Sustainable (61) Cage free animal husbandry (60) Wholefood shop (57) Species-appropriate animal husbandry (57) Organic (56)	
	Mass animal husbandry (1181) Tainted meat (292) GMO-corn (266) Pesticides (246) GMO-food (113) Cruelty to animals (107) Monocropping (90)	
	High prices (60) Hunger in the world (41) World hunger (38) Expensive food (24) High costs (22) Money + expensive (10) Low yields (10)	
N e g a t i v e		

Figure 7.
Major components of the different frames and their frequencies

5 Discussion

In earlier days a typical phrase was: “[You’ll] eat what’s put on the table!” This demonstrates that food was existential and had not to be questioned what seems unimaginable nowadays in child education and Western daily life. In any case, the improvements lying between lack of food and total choice were achieved in the agri-food industry and promoted by the Common Agricultural Policy. These achievements became the ‘regular standard’ as today’s society is faced with an overabundance of diverse foods. In conjunction with the growing disconnection between food production on farms – as well as in the food industry - and food consumption in private households, a critical view of the food chain with the first food scandals in the 1970s (Lang, Heasman, 2004) and new specialized publics were formed (Gerlach et al., 2005). Beck and Ritter (2004) proposed the term ‘risk society’ for this transition from insufficiency to risk

† Analyses are based on cross-classified tables. Variations are statistically secured through the use of standardized residuals.

orientation in their theory for the entire society.

The agri-food industry continues in its pursuit of producing more, safer and cheaper food (DBV, 2009), in order to be competitive in the local and also in global markets of today. The intensification involved in this process, i.e. the increasing use of chemicals (pesticides, fertilizers, hormones and artificial food additives) and the industrialization of all processes in the chain, especially in animal husbandry, were the topics brought to the consumers by classical media and more and more through the internet/social media. Thus, the information and the relevant frames of the public are no longer based on personal experiences as in former times, but published through media that rather tend to publish bad news (Ruhrmann, 1999).

Since the term framing was first defined by Bateson in 1972, it was often the basis for media research (Dahinden, 2006) and was used in a multitude of studies about the agricultural and food producing sector in classic media (e. g. Feindt et al., 2009; Lensch et al., 2008). However, the presented study is the first approach to characterizing the perception of the industry in the dynamically developing Web 2.0. This communication channel is forming new agendas that later on might migrate into classic media. Subsequently, these agendas are then much more difficult to frame than at an earlier stage. Thus, developments in the social web are crucial for the industry and governments to grasp new relevant issues that could evoke new threats or opportunities. This will enable political and industrial actors to structure specific communication strategies before issues arise to scandals and reach the media.

The results of the analysis reveal that the web community and, to a certain extent, modern society are becoming more interested in agricultural and food related issues, including controversial topics like GMOs, industrial agriculture and animal welfare. These controversial issues are mainly discussed under ethical and risk aspects, with the two-sided line of argumentation from opposing the 'conventional' food producing methods to honouring 'alternative' methods. The positive sense of the discussed 'natural' aspects lies in the reduction of unethical and risk-inducing ways of production as well as in the consumption of food. The discussion about economical 'productivity' aspects has only minor importance in the web discourse. Even though, actual consumption habits are still strongly price-driven (Nielsen, 2009) and not totally congruent with the framing of agricultural and food related issues. This imbalance of the frequency of positive and negative posts can be seen as typical. According to studies concerning consumer behavior, it can be assumed that critical opinions are communicated twice as much (or even more) as positive experience or meanings (Kotler et al., 2007; Hansen, Jescke, 1995).

Furthermore we can show, that the framing of the agri-food industry is not static and unchangeable. In the spring of 2008, the world food markets were characterized through shortages of agricultural commodities, and consequently web discussion about the analyzed issues changed to a more positive framing of productivity. Here, a time slot opened up to penetrate public discussion about the advantages of modern food production and general food security achieved over the last decades. In the theory, stable frames are sometimes confronted with contrary events in reality which enables a shift towards a dominance of other frames. More coordinated efforts of all productivity-oriented companies, associations and politicians could probably have brought a change in the frame regime.

However, the agri-food industry missed, especially in the spring of 2008, initiating a more distinguished dialogue with the consumer and is operating more or less independently from society. This development is likely to accelerate as a result of the growth of social media, as the process of sharing frames and stabilizing them in users' minds is not limited as in classical media. Every highly involved producer is able to place his framing of the agri-food industry in the web and every interested user can find each post. At the moment this would be for the most part a very negative framing of the agribusiness and its processes. This seems to be a general public development, since all important industries such as the chemical or the automotive industry in Germany are faced with a bad reputation and a lack of confidence (GPRA, 2009).

The agri-food industry, associations and governments need to publicly address the developments and tackle them proactively (Zuehlsdorf, 2002; Leitschuh-Fecht, Bergius, 2007) whereby the social media can be a good entry with its mostly highly involved and well educated opinion leaders. Both industry and political groups should monitor existing and upcoming issues which might become important in the future. They need to present themselves as fair and open-minded dialogue partners to be able to shape the discourse of the diverse issues. Due to the fact that currently the framing of the discourse is shaped by NGOs, journalists and other external stakeholders, negative wording like 'mass animal husbandry' or 'tainted meat' is dominating. The shaping of a sector's wording should be done by the internal actors at a stage, where the framing is not already stable.____

6 Conclusion and limitations

The ongoing structural change in public communication, particularly on the internet, involves new challenges for modern communications management. While today's prevailing marketing communication is mass media orientated, the emphasis in the social media is shifting towards its recipients who can be user and producer of content at the same time (Gillmor, 2004).

As has been shown in the analysis of the social media, the agri-food sector, broken down into a large number of single issues, is a permanent topic in the web, and also in the general public discourse in Germany with critical comments dominating. Even though the participative and dynamic structure of social media complicates the presented framing of the discourse, it can provide deep insights into the recipient's (consumer's) point of view.

The results shown here are limited through the quality of constructs behind the frames. Software-based analysis always tends to be imprecise and inflexible, and users tend to publish negative comments exclusively. Thus, the accumulation of different frame types can differ from the average personal framing (passive user). Only 9 % of the web users are actively producing web content, but these users can be seen as opinion leaders (TNS Infratest, 2007). Thus, we would suggest two points for further research. On the one hand is the software-based quantitative semantic analysis that has developed rapidly within the last years, but a good set of semantic categories (frames) for the agri-food industry related topics is only started by our research group. A more precise and better tested set could provide monitoring tools for the industry and governments to understand people's opinions on the diverse issues. On the other hand, diverse theories like priming and agenda-setting could be appropriate for evaluation. Research in this direction could pluralize the points of view and could help to identify new crises and scandals at an early stage and to localize the sources easily.

Hence, in order to benefit from the dynamic process of web-based social media, the establishment of systematic online monitoring might be helpful for the industry and governments. This would allow the detection of relevant issues and instabilities in the present frames at an early stage, so that communication strategies can be customized accordingly. Especially for the agribusiness, which is confronted with various issues and stakeholders, like local target groups or NGOs, strategic Issue Management is of particular importance.

Social media offer the agri-food industry two powerful opportunities to cope with the public's reservations towards them. Firstly, all opinions of the public are accessible in an unbiased form, since the posts are published voluntarily. This is an advantage compared to professional surveys, which tend to be socially biased, even though the presented results are not representative. All critical points can be evaluated and analyzed in the framework of professional issue management in order to get a picture of the people's requests for integrating them in their companies' strategies. And secondly, social media provide the opportunity to publish one's own interpretation to counteract the momentarily dominating framing of the agri-food sector or the present agricultural policy.

By taking advantage of modern communication platforms, not only the advanced possibility to react to an upcoming issue is valuable, but also the costs of coping can be reduced. In this context, the quality of the issue analysis decides the possibility of an effective and efficient (re)action (Liebl, 2000; Downs, 1972). In other words: "An issue ignored is a crisis invited" (Henry Kissinger).

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