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Social media as a useful tool in food risk and benefit communication? A strategic orientation approach

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ABSTRACT

Although considerable progress has been made in understanding the determinants of risk perception and in identifying the necessary components of effective food risk and benefit communication, this has not been matched with the development of efficient and appropriate communication tools. Little work has been done examining the implications of the explosion of new media and web technologies, which may offer potential for improving food risk and benefit communication. First, this study examines the views of stakeholders ($n = 38$) and experts ($n = 33$) in the food domain on the potential use of these emerging media for food risk/benefit communication. Based on in-depth interviews in six European countries (Belgium, Ireland, Italy, Latvia, Spain and The Netherlands), strengths, weaknesses, opportunities and threats (SWOT) of social media in food risk and benefit communication were identified. Second, a Strategic Orientation Round (SOR) was used to evaluate the relative importance of the SWOT components according to stakeholders ($n = 10$) and experts ($n = 13$). Results show that both stakeholders and experts confirm a future role of social media in food risk and benefit communication. Strengths as speed, accessibility and interaction make social media an interesting tool in crisis communication or issue awareness raising. Weaknesses as the lack of a filter, low trust, the risk of information overload and a communication preference for traditional media are acknowledged.

Introduction

The communication of risks and benefits in relation to food has gained growing attention over the last decennia (Renn, 2008). The purpose of this communication can vary greatly; building trust and consensus, creating awareness, educating, influencing perceptions, attitudes and beliefs, promoting action and changing behaviour (McGloin et al., 2009). Good communication practice seeks to bridge the divides between scientific experts, policy makers, health practitioners, industry marketers, and consumers. It is important to acknowledge that consumers can diverge in their responses to the same information, with many factors shaping their assessments and perceptions of a risk/benefit issue (Barnett et al., 2011). Effective communication requires identification and thorough understanding of the target audience's needs and appropriate management of the information provision so that it optimally addresses particular needs. Much research has been done to examine the determinants of risk perception and to identify the necessary components of effective food risk communication (e.g. Covello and Sandman, 2001; Lofstedt, 2006; McCarthy and Brennan, 2009; Rollin et al., 2011). However, this research mainly focuses on offline communication. More research is needed to study the implications of the explosion of new media and web technologies. The present paper will focus on the communicator's view of the potential opportunities and challenges of social media in the context of food risk and benefit communication.

The traditional communication model used in the food sector is based on the knowledge-deficit model of communication: an information transfer and educative process involving the one-way flow

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of objective scientific information from an authoritative expert source to the public (Hilgartner, 1990; Irwin and Wynne, 1996). The goal of this communication strategy is to persuade the public to accept expert risk judgements and to follow the advice and guidelines without questioning. However, experts and lay people perceive, judge, prioritise and deal with risks differently. Therefore, food consumers often ignore or query the risk assessments and advice of scientists, the food industry and/or public bodies. Awareness of this 'expert-lay discrepancy' (Hansen et al., 2003) has led to a refocus on risk communication as the interactive exchange of information and opinions throughout the risk analysis process (Fischhoff, 2011). While there is an acceptance for the importance of public interaction and exchange of information, the traditional way for communicators to spread their message remains to be through mass media (Noar, 2006). The use of traditional media allows communicators to reach a large audience but neglects the importance of interactivity and the active role of consumers in the communication process.

In the last decennium the Internet has seen a new array of technical innovations that go collectively under the names of 'web 2.0'. Web 2.0 provided a platform for the evolution of social media which is defined as "a group of Internet-based applications that build on the ideological and technological foundations of web 2.0, and that allow the creation and exchange of user generated content" (Kaplan and Haenlein, 2010, p. 61). Examples include wiki's, blogs, microblogs, podcasts, video-sharing and social networking websites. With the introduction of web 2.0, consumers began to occupy a central position as a communicator and information source (Meikle and Young, 2012). These technological developments have led to the emergence of a renewed form of 'prosumption'; a market development in which consumers take over some of the activities of producers (Ritzer and Jurgenson, 2010). For example, on Wikipedia, users generate, update and edit articles (Giles, 2005), on YouTube users upload personal videos (Cheng et al., 2008) and Twitter is used to share information and opinions with followers (Jansen et al., 2009). Companies and individuals are increasingly utilizing and involving the end-users to generate ideas and to develop products and services for them.

Web 1.0 allowed consumers to read and search information, whereas web 2.0 allows consumers to create information themselves. This evolution, together with the introduction of a consumer-dominated channel entails important consequences for communication in general (Cova and Pace, 2006). International food companies acknowledge the power of social media and gradually shift their marketing and communication budgets into new media where the public gets opportunity for both creating and sharing a content. As a consequence, the company passes control of their brand and communication strategy partly over to the community. A well-known example of this phenomenon is the concept of 'viral marketing' where customers are stimulated to forward an online marketing message to members of their social network (Van Der Lans et al., 2010). By involving the community, a message can be spread effortlessly and rapidly without interference of the initial sender. Communities with like-minded individuals can also create their own identity and subculture and, interestingly, culinary practices also occupy a role in this. The paper by Cronin and McCarthy (2011) for example illustrates how gamers share information with their peers about the best foods to eat and the foods to avoid when playing videogames.

Within food safety and health authorities, there has been a more reserved attitude towards the use of social media thus far (Thackeray et al., 2012), with a few notable exceptions in the area of public health. Centres for Disease Control and Prevention (CDC) in the United States have effectively implemented social media platforms in their communication strategies in times of crises, including the 2009 *Salmonella typhimurium* outbreak associated with peanut butter and peanut-containing products (CDC, 2010). Within this communication strategy, the CDC effectively empowered the public by employing numerous social media tools which facilitated two-way interaction and the spreading of personalised messages. Rutsaert et al. (2013) explored the potential of social media to enforce some of the key principles recommended for effective risk and benefit communication. Their work pointed out that social media applications are particularly useful due to the opportunity of direct communication and interaction with the audience. Food risk communicators are also advised to be present and pro-active on social media to increase visibility for the general public and key opinion formers (e.g. popular bloggers and journalists), to establish themselves as credible interactive sources of information and to enable timely communication with the public.

Besides this work, minimal research has been carried out on how best to effectively use social media to communicate to the public about food risks and benefits. The reserved attitude towards social media witnessed amongst official bodies in the area of food risk/benefit communication may result from a lack of evidence-based guidelines advising officials on how to most effectively incorporate social media. Many authorities and official bodies may be willing to have a presence on social media but may be unsure of how to effectively engage with it. Authorities' perceptions of social media as a communication tool may be coloured by incidents such as the McDonalds 'Twitter Fail'. McDonalds developed a Twitter campaign that attempted to get the public talking about their favourite memories of the fast-food chain but this backfired when Twitter users 'hijacked' the hashtag to tell horror stories of food safety and production and poor service (Bradshaw, 2012). Incidents such as this may leave public officials cautious about engaging with social media at an official level. Their wariness is only amplified by the absence of sufficient and evidence-based guidelines to advise them on the 'do's' and 'don'ts' of official communication on social media. Having a presence on social media is not enough – these authorities need to be equipped with the proper resources to use social media in the most effective manner. To ensure such proper resources are available, evidence-based guidelines for communicating via social media are needed. Understanding how official bodies perceive social media as a communicative strategy tool is needed to ensure that such guidelines are based on the views and needs of those charged with the remit of communication.

The current study aims to take the first step towards informing evidence-based guidelines. First, it will examine how social media can contribute to the communication of food risks and benefits according to exports and stakeholders in the food chain. Second, it will develop appropriate strategies for optimal social media use in the future. Because of its exploratory nature, the first goal will be answered using a qualitative approach, i.e. the SWOT method (Fine, 2009). This approach focuses on the identification of the perceived strengths and weaknesses of social media for food risk and benefit communication, as well as on the opportunities and threats facing the use of social media. The second goal is executed by using a more quantitative approach, through performing a Strategic Orientation Round (SOR) (Van Wezemael et al., 2013) to investigate the possibilities for wider application and further dissemination of social media use.

Material and methods

Participants

The goal of this study is to gain a broad view of the ideas about the usefulness of social media in communicating about food risks and benefits. Authorities and scientific experts are traditionally

seen as the responsible actors for informing the public about risks and benefits (Frewer, 2004). Authorities and scientific experts in the current study will further be referred to as 'experts'. The main focus of the risk communication literature has traditionally been on the distinction between expert and lay points of view (Hansen et al., 2003; Verbeke et al., 2007). Research by Shepherd et al. (2006) and Houghton et al. (2008) recognises that many other stakeholders of the food chain like the media, producers and retailers also fulfil an important role in the communication landscape These stakeholders might have similar expertise and knowledge as the experts, but different opinions, perspectives and communication objectives, e.g. due to other or vested interests. As this might lead to alternate views on the value of social media, different types of stakeholders of the European food chain have also included in the study.

A total of 33 in-depth interviews were carried out with experts. Interviews took place with European experts from (i) regulatory authority stakeholders including food safety agencies, (ii) academic stakeholders, and (iii) government sector officials and/or policy makers in six countries. In some cases interviews were carried out with two individuals from an agency, i.e. with a person with a scientific-political role in the organisation, and with a person with a communications role in the organisation. These institutes or organisations were responsible for food safety management and communication at regional, national or European level.

A total of 38 in-depth interviews were carried out with individuals from relevant stakeholders in the European food chain. Different types of stakeholders vary not only in their values and concerns but also in their technical expertise and in their level of involvement with particular issues (Shepherd et al., 2006). Stakeholders included are: (i) media representatives including journalists and media producers, (ii) non-governmental and consumer organisations and (iii) industry representatives including food retailers and producers, trade bodies and farmers' unions. The rationale for selecting these categories of stakeholder participants was to ensure a representation of stakeholders from across the food chain.

Methods

The evaluation of social media in the domain of food risk and benefit communication was performed using the mixed sequential design of Van Wezemael et al. (2013). Data collection and analysis were executed in two stages. The first stage consisted of a listing of SWOT components. The second stage consisted of scoring of a SWOT matrix and performing a quantitative analysis through a Strategic Orientation Round (SOR).

Qualitative research stage

The evaluation of social media as a tool in food risk and benefit communication is based on a SWOT-analysis (i.e. an analysis of strengths, weaknesses, opportunities and threats), a strategic planning tool used to evaluate in a systematic way the external threats and opportunities, and the internal weaknesses and strengths of a project (Fine, 2009). A SWOT analysis is a stepwise method involving different stages of information and data collection, consisting of specifying the project's objectives and identifying the internal and external factors that support or hinder achieving the specified objective, i.e. improving food risk and benefit communication through social media. The SWOT analysis does not only evaluate the perception of social media itself, but also provides insights into the further possibilities of applying social media in food risk and benefit communication. This allows the identification of the main points of interest for future strategy development (Sabbe et al., 2009). SWOT analysis is typically done by so-called "prime witnesses", i.e. people who are well familiarised with the topic. In the present study these were stakeholders and experts linked to food risk and benefit communication from six European countries. The diversity in backgrounds of participants ensured variability in the obtained SWOT components.

During the interview, the participants were asked to list possible internal strengths and weaknesses, and external opportunities and threats of the use of social media in the domain of food risk and benefit communication. After the aggregation and translation of the transcripts into English, those lists were filtered from repeated and overlapping answers. Misclassifications of internal (strengths and weaknesses) and external (opportunities and threats) characteristics were relocated by the researchers. The answers in the filtered list were categorized based on their content and coherence, resulting in a final list of five strengths, five weaknesses, five opportunities and five threats. Subsequently, the SWOT components were checked for consensus across countries. All components were mentioned in at least five of the six countries, except for the component "low consumer interest in social media" which was only mentioned in Belgium, Ireland and Spain.

Quantitative research stage

In the second (i.e. the quantitative) stage of the study a SOR analysis was performed in order to translate the statements in the SWOT analysis into more practical strategic objectives. The SWOT-analysis is mainly a descriptive and synthesising instrument. Within the analysis, no hierarchy between the components is established and therefore there is no solid base from which to define a strategy. However, based on the qualitative SWOT method, variations have been developed that make the step to a quantitative strategic approach (Dyson, 2004). One such variation is the Strategic Orientation Round (SOR) method (Van Wezemael et al., 2013). The SOR analysis relies on the outcome of the SWOT analysis. The SOR is a planning instrument that is used to define strategic objectives. While the SWOT analysis makes a situation analysis, the SOR analysis is used to make the step from analysis to strategy. The advantage of strategic orientation is that it explicitly links diagnosis and assessment to strategic decisions and action planning, while the connection between analysis and planning is often implicit.

The identified SWOT components were combined in a matrix where the rows were filled with the internal strengths and weaknesses, and the columns with the external opportunities and threats. In this matrix, each of the internal components was confronted with each of the external components. Next, the involved experts and stakeholders were asked individually to attribute scores to every single cell of the matrix. These scores represented their answers on four questions related to the quadrant encompassing the cell (see Table 1). Scores were attributed according to two guidelines: firstly, a maximum of 12 points could be attributed to each column; and secondly, each single cell score had to be

Table 1
Meaning of the quadrants of the SWOT matrix.

	Opportunities	Threats
Strengths	To what degree does the strength facilitate to benefit from the opportunity?	To what degree does the strength allow to cope with the threat?
Weaknesses	To what degree does the weakness prevent to benefit from the opportunity?	To what degree does the weakness prevent to cope with the threat?

Table 2
Number of experts and stakeholders in the qualitative and quantitative stage (type of participant and country).

		Qualitative stage							Quantitative stage
		Belgium	Ireland	Italy	Latvia	The Netherlands	Spain	Total	Total
Expert	Regulatory authority stakeholders	2	6	6	3	1	3	21	6
	Academic stakeholders	2	2			1	2	7	3
	Government sector officials			2		1	2	5	3
	Total	4	8	8	3	3	7	33	13
Stakeholder	Media representatives (journalists and media producer)	2	1	2	2	2	2	11	4
	Non-governmental and consumer organisations	1	2	1	1	1	1	7	3
	Industry representatives (food retail and production, trade bodies, farmer unions)	3	3	5	3	4	2	20	3
	Total	6	6	8	6	7	5	38	10

within the range of 0–3, indicating points of no (0)/low (1)/medium (2)/high (3) importance.

The attributed scores in the SOR matrix can be analysed on different levels. Aggregated scores per quadrant reveal the most relevant strategic choice concerning the use of social media. This level gives an overview of what would be the best (main) strategy for the use of social media in food risk and benefit communication. Secondly, the total score per strength, weakness, opportunity or threat can be analysed. This level of analysis makes a distinction between the different components found in the qualitative stage where all the components received an even weight. In this stage, it is possible to rank them according to their importance. Thirdly, the aggregated scores per cell indicate the relevance of each cell relative to other cells of the SWOT matrix. This allows identifying the key points of interest in using social media in food risk/benefit communication.

Data collection

In the first stage (January–March 2011), semi-structured face-to-face interviews were carried out with a purposive sample of experts as well as stakeholders from the six participating countries: Belgium, Ireland, Italy, Latvia, The Netherlands, and Spain (Table 2). These countries were chosen to represent a diversity of food governance structures, exposure to past food crisis episodes, as well as reflecting a geographical spread in Europe. The SWOT method was part of a larger semi-structured interview concerning the communication of food risks and benefits. Other parts of the interview covered perception of food risks and benefits, the conceptualisation of a food crisis and the use of communication tools in general.

In the second stage (October 2011), participants of the qualitative interviews were contacted again through electronic means to take part in the SOR scoring stage of the study. Participants were informed about the meaning of the SWOT components as resulting from the first phase and they were provided a scoring matrix. In total, 33 experts as well as 38 stakeholders took part in the qualitative stage while 13 experts and 10 stakeholders completed the quantitative stage.

Results

Qualitative research stage

Strengths of social media in food risk and benefit communication

Strengths are intrinsically linked to social media and represent a possible source of competitive advantage. Speed was identified as a first strength by stakeholders and experts. Social media is the perfect tool to speed up communication and, for all practical purposes, it speeds up awareness. It is a way to get a message out instantly and it gives the opportunity to communicate in "real-time".

> *"Yeah (speed is a strength). Because like I say you are first to the audience with the message." (Ireland, food safety agency)*

Secondly, interaction was perceived as a strength of social media. It offers interested parties the opportunity of increased involvement in the communication process. There is the possibility to interact with the public and organizations receive instant feedback from consumers.

> *"We would like to receive citizens' feedback by reporting social issues like: "I have seen these yogurts in X supermarket and they do not have an expiry date." (Spain, governmental body)*

The third strength according to stakeholders and experts was accessibility. The development of and increased access to the internet is a key driver in the emergence of new media. Social media tools are in many cases easily accessible and require low technological knowledge. And on top of that most popular tools like Facebook, YouTube and Twitter are free to use.

A fourth strength, peer-to-peer awareness was mentioned which relates to the possibility to see interests of "friends" or "followers". Consumers became valuable channels themselves to spread a message.

> *"I like the thing of, if I read something on a website. . .and I like it (on Facebook) and you are my friend: you like it too. If we had something up about the benefits of eating oily fish and I like it and if you are my friend and you like it, you will probably like it because I like it, as opposed to because the (food safety agency) has told you. I have kind of inadvertently told you so I think that is what is amazing. . . the power of it." (Ireland, food safety agency)*

The technological possibilities of social media were perceived as the fifth strength. Social media tools make it easy to post lots of information and material, including photos and videos online and are a growing field in combination with mobile technologies.

Weaknesses of social media in food risk and benefit communication

Weaknesses are intrinsically linked to social media and represent a source of possible competitive disadvantage. A first weakness relates to low trust in the (information) source. Sources on social media can be anonymous and unidentifiable which lowers trust in social media as an information source. The participants mention the lack of control on accurate information, on the source and the anonymity of lots of information posted often by lay people. This often creates a gap between facts and perceptions. This low trust in source can be enhanced by the speed of social media. The rapid spread of a false message, e.g. about potential food crisis can have severe consequences. There is no room to check the value, the source or the dependability of a message.

The absence of a filter is seen as a second weakness of social media. Everybody (experts, companies, consumers) is able to post information online through social media and can become a source

of information. There is no filter with respect to accessing social media and very few barriers to stop people from publishing what comes to mind.

"Everybody can be a source of information, and obviously, not everybody is a trusted source of information. We are aware of what is said on this medium, but we need to filter and contrast the information." (Spain, media producer).

Thirdly, continuous investment of human capital and time is needed to stay up to date in the fast evolving world of social media. Pressure on time is perceived negatively by a lot stakeholders and experts.

"I do not understand how people have time to sit on Twitter writing their thoughts down on different issues...Trying to service something like that would be very difficult. And that is one of the things about social media meaning the amount of time it actually takes and the resources you have to put into keep everything going." (Ireland, food safety agency)

Fourthly, concerns about intellectual property rights, privacy and data protection are regularly raised as disadvantages in relation to social media.

"It is in some cases important to whom you send your information. But once it is spread on social media, it can become an unguided projectile." (Belgium, non-governmental organisation)

Fifthly, a negative image of social media is seen as a weak spot. Social media are linked to advertisement, enjoyment, spread of extreme views, bullying, etc., and may possess a negative image among some population groups. In several cases, lack of familiarity is one the major barriers for not using social media in their organization and particularly for food risk and benefit communication; there is a fear for the unknown.

Opportunities for the use of social media in food risk and benefit communication

Opportunities are new perspectives and chances for social media that might provide for its application and usability. A first identified opportunity is the need to reach specific audiences. More and more situations arise where a targeted, specific audience should be used. Especially in terms of reaching a younger audience, social media can provide opportunities. But the perceived limited demographic audience and the focus on young people is also seen as a limitation.

"Thus, once you have nailed down your target group, social media can be very effective. If one compares that with a TV-campaign, a TV-campaign is like shooting a very large shower of bullets, and if one aims at pregnant women, one hopes to hit some of them. But with this (social media), when they are pregnant and are looking for "pregnant", they find you. That can be the benefit of social media." (The Netherlands, government body)

Another important audience which is active on social media is traditional media. Many journalists increasingly rely on social media as a source of information and news.

"The odd thing is, we are primarily followed by professionals. I do have a thousand followers now, but they are mostly journalists, dieticians, etc. Now we know how they perceive the information that is communicated to them." (The Netherlands, government body)

Crisis communication is seen as a second opportunity for communication through social media. A growing number of situations arise where a large audience rapidly needs to receive information.

"Social media is useful in a crisis, not to explain something, but to reach many people or give a simple message." (Belgium, food safety agency)

Thirdly, there is a high current societal popularity of communication technologies involving the internet and mobile phones. Several experts and stakeholders saw this growing market as an opportunity to spread their message in, for instance, applications for cell phones and tablets. This is believed to result in high reach.

Community feeling is recognised as a forth opportunity. Consumers with common interests congregate in online communities. The experts and stakeholders were very positive about the opportunity to engage with these communities and share expertise and experiences. The possibility of having a conversation with the public gives the opportunity to identify needs and worries in relation to food.

"The community feeling, even if it is an online community, is a strength of social media. You are part of a group and I think it is important for a lot of people to be part of a group." (Belgium, non-governmental organisation)

Finally, the experts and stakeholders recognised an opportunity to provide detailed, unbiased and easily accessible information about food, based on reliable facts that can be consulted when a need is felt. Social media easily reach large audiences. Traditionally, only mass media organizations were able to reach large amounts of people with information.

Threats for the use of social media in food risk and benefit communication

Threats are negative external aspects that might cause problems or losses with the use of social media in food risk and benefit communication. A first threat of social media is the fact that the online world is a fast changing area. Online technologies are continuously evolving and changing with the consequence that the tools of today can be outdated tomorrow. Some participants feared to invest in a domain that might be redundant in a few years.

"From my point of view, one inconvenience is that the medium evolves too fast and once you get used to a tool, they change it again." (Spain, scientific research institute)

Secondly, the overload of information was identified as a threat. Users are confronted with an overload of information and communication. Information gets lost in the noise. Because of all this existing noise, it is hard to get your message through according to the respondents.

"One and all can put on there what they want about food, it is a bit a jungle." (Belgium, food safety agency)

Preference for traditional media and channels was discussed as a third threat. Traditional communication channels and media like radio, television and quality newspapers are preferred in allocation of resources to spread a message about food risks and/or benefits.

Fourthly, there is a low consumer interest in online information: Audiences choose their interests: People cannot be forced to listen or attend, and they will not spread information if it is not interesting enough.

"It cannot be expected that you will reach groups who are not interested. One of the major target groups are the underprivileged and socially weak. I do not think we will reach them through Facebook. I do not think that the ones who are not interested will follow a group about food safety. We hit against the same boundaries as traditional media." (Belgium, food safety agency)

Emotional behaviour is recognized as a fifth threat. There is a tendency in society that people say/write what they want and do not think about possible consequences. The low threshold to post

an opinion has as a negative effect that consumers react too fast and emotional without thinking about the consequences.

Quantitative research stage

In the quantitative stage, stakeholders' and experts' opinions will be compared. Both are important actors in the food chain but with different goals, which can be reflected in the outcome of the strategic orientation round. In the following subsections, the results of experts and stakeholders will be discussed separately, differences between both groups will be discussed and suitable strategies and policy options will be compared.

The aggregated cell score indicates the relevance of each cell relative to other cells of the SWOT matrix. As comparisons are based on aggregated scores, differences in the number of participants between scientific experts and authorities ($n = 13$) as well as stakeholders ($n = 10$) result in different maximum scores. The cell score per participant ranges from 0 to 3 resulting in a maximum cell score of 39 for the experts and 30 for the stakeholders. The maximum score attributed per column (scores for opportunities and threats) per person is 12 resulting in maximum column scores of 156 and 120 for experts and stakeholders, respectively. There are no limitations in terms of total scores per row (scores for strengths and weaknesses); therefore these can be up to 390 and 300 for experts and stakeholders, respectively.

Quantitative analysis of the results from the experts

Table 3 presents the total score of the 13 expert responses. First, the total scores the experts attributed to the different SWOT components were compared. Crisis communication (145) scores the highest among opportunities. Need for unbiased information (143), popularity of communication technology (141) and the need to reach a specific audience (140) also gain high scores as opportunities. However, need for unbiased information mainly scores high because of high scores for the weaknesses while the others have high scores related to the strengths. One major threat is identified: preference for traditional media channels (148). The most important strengths of social media according to the experts are speed (185), interaction (185), and accessibility (169). The most vital weaknesses are low trust in source (188) and the absence of a filter (156).

The aggregated cell scores in the first quadrant of the grid (confronting strengths and opportunities) indicate to what extent a specific strength allows for a communicator to benefit from a specific opportunity. The high score for crisis communication (91) is mainly a result of the possibility of fast information transmission through social media. The need to reach a specific audience (90) benefits from different strengths like the high accessibility and the possibility of interaction. The high current societal popularity of social media scores very good on all strengths but the highest score is given to the technological possibilities.

The aggregated cell scores in the second quadrant show whether a particular strength enables a communicator to cope with a threat. The threat of social media as a 'fast changing area' (88) is counterbalanced by speed and accessibility as two strengths. The threat of overload of information (75) can be mitigated by interaction; information networks and communities can assist in distinguishing useful information in the overwhelming supply. A preference for traditional media and channels (77) is revealed as the main threat for social media use in food risk and benefit communication but social media has one key strength; the speed of communication and information transmission.

The aggregated cell scores in the third quadrant indicate whether a weakness prevents a communicator from coping with the threat. Two weaknesses are fairly dominant in this area: low trust in social media as a source (102) and absence of a filter

Table 3
Aggregated SWOT scoring matrix for experts ($n = 13$; maximum cell score = 39).

		Opportunities						Threats					Total
		Need to reach specific audience	Crisis communication	Popularity of communication technology	Community feeling	Need for unbiased information	Subtotal	Fast changing area	Information crowd and overload	Preference for traditional media and channels	Low consumer interest in online information	Emotional behaviour	Subtotal	
Strengths		First quadrant						Second quadrant						
	Speed	18	34	17	10	11	90	26	17	22	11	19	95	185
	Interaction	23	19	16	27	14	99	17	21	15	16	17	86	185
	Peer-to-peer awareness	10	7	16	19	12	64	5	14	13	14	16	62	126
	Accessibility	25	20	18	13	15	91	23	14	16	17	8	78	169
	Technological possibilities	14	11	26	9	9	69	17	9	11	11	7	55	124
	Subtotal	90	91	93	78	61		88	75	77	69	67		
Weaknesses		Fourth quadrant						Third quadrant						
	Low trust in source	18	23	7	7	31	86	13	16	30	23	20	102	188
	No filter	8	18	7	7	29	69	5	23	17	19	23	87	156
	Continuous investment needed	12	4	18	7	1	42	25	8	6	6	4	49	91
	Privacy concerns	3	0	8	17	6	34	6	3	6	7	10	32	66
	Negative image	9	9	8	10	15	51	4	10	12	18	16	60	111
	Subtotal	50	54	48	48	82		53	60	71	73	73		
	Total (Max = 156)	140	145	141	126	143		141	135	148	142	140		

Table 4
Aggregated SWOT scoring matrix for stakeholders (n = 10; maximum cell score is 30).

		Opportunities						Threats					Total
		Need to reach specific audience	Crisis communication	Popularity of communication technology	Community feeling	Need for unbiased information	Subtotal	Fast changing area	Information crowd and overload	Preference for traditional media and channels	Low consumer interest in online information	Emotional behaviour	Subtotal	
Strengths		First quadrant						Second quadrant						
	Speed	16	22	20	14	11	83	17	16	14	14	11	72	155
	Interaction	17	12	15	21	12	77	13	12	8	18	16	67	144
	Peer-to-peer awareness	14	9	17	19	14	73	8	10	9	10	11	48	121
	Accessibility	17	14	14	14	15	74	16	12	15	11	8	62	136
	Technological possibilities	15	13	12	13	11	64	13	6	11	8	4	42	106
	Subtotal	79	70	78	81	63		67	56	57	61	50		
Weaknesses		Fourth quadrant						Third quadrant						
	Low trust in source	13	14	8	6	18	59	12	12	15	10	10	59	118
	No filter	9	11	4	4	13	41	3	11	9	9	12	44	85
	Continuous investment needed	10	11	13	4	8	46	8	15	5	6	9	43	89
	Privacy concerns	2	3	6	12	5	28	4	9	8	7	9	37	65
	Negative image	6	4	6	6	4	26	4	2	8	6	10	30	56
	Subtotal	40	43	37	32	48		31	49	45	38	50		
	Total (Max = 156)	119	113	115	113	111		98	105	102	99	100		

(87). Low trust source plays a major role in the most important threat of communication through social media i.e. the preference for traditional media and channels (71). The fact that sources on social media can be anonymous and unidentifiable is perceived as the greatest weakness compared to traditional media. This characteristic also plays an important role in the low consumer interest in online information and emotional behaviour. The threat of emotional behaviour also interacts with a lack of an information filter, which may lead to an enormous supply of information. The need for continuous investment is seen as the greatest drawback of social media.

The aggregated cell scores in the fourth quadrant indicate whether a weakness prevents a communicator from benefiting from a particular opportunity. In this quadrant, two weaknesses are highlighted: low trust in source (86) and the absence of a filter (69). They are both main reasons for not using social media as a tool to provide unbiased information to consumers (82). Low trust in the source is also a limitation of using social media for food crisis communication (54).

Quantitative analysis of the results from the stakeholders

Table 4 presents the total score of the 10 stakeholder's responses. The most appealing opportunity for the use of social media is the ability to reach a specific audience (119). Information crowd and overload (105) on the other hand is the biggest threat for communication through social media. The main perceived strengths of social media are its speed (155), interaction (144) and accessibility (136) which is similar to the views of experts. Low trust in source (118) and the need for a continuous investment (89) are identified as the main weaknesses.

The aggregated cell scores in the first quadrant show the highest score for speed – food crisis communication combination (22). The opportunity to reach a specific audience (79) benefits from most strengths of communication through social media. The popularity of the channel (78) is related to the speed on one hand and the possibility to see and trace interests of friends on the other hand. This characteristic together with the possibility of interaction are also important for the opportunity of creating communities (81).

The second quadrant reveals the highest score for interaction as a strength to cope with low trust in online information (61). The threat that online technology is constantly evolving (67) can be countered by accessibility and the possibility of fast information transmission.

In the third quadrant, scores are in general relatively low. The need for continuous investment seems to be an important weakness in dealing with the threat of information overload (49) and the lack of trust in online sources in dealing with the high reliability of traditional sources (45).

The highest score in the fourth quadrant contributes to the low trust in sources on social media in relation with the need for detailed, unbiased and readily available information (48).

Comparison of experts' and stakeholders' evaluations of social media

The overall scores of the SWOT analysis can be translated into strategic choices and related policy options, obtained by summing the scores per quadrant in the SOR. Strategy is hereby understood as the way the internal strengths and weaknesses are used to grasp the most important external opportunities and tackle the most important threats (Van Wezemael et al., 2013). The quadrant with the highest relative score implies the main strategy, which can be offensive (strength-opportunity), defensive (strength-threat), clean-up (weakness-opportunity), or crisis (weakness-threat). A comparison of experts' and stakeholders' scores based on the overall strategy is presented in Table 5. The total scores per quadrant are compared to the maximum possible quadrant score taking

Table 5
Proportion of the maximum score per quadrant for experts (n = 13) and stakeholders (n = 10).

	Opportunities	Threats
Strengths	Strategic choice: ATTACK Experts: 413/780 = 53% Stakeholders: 371/600 = 62%	Strategic choice: DEFEND Experts: 376/780 = 48% Stakeholders: 330/600 = 49%
Weaknesses	Strategic choice: CLEAN UP Experts: 282/780 = 36% Stakeholders: 200/600 = 33%	Strategic choice: CRISIS Experts: 330/780 = 42% Stakeholders: 213/600 = 36%

into account the number of participants, the number of rows and the maximum column score of 12. The results suggest that for both groups an offensive strategy, i.e. exploiting strengths to take advantage of possible opportunities in the environment, is perceived as the most suitable strategy for using social media in food risk and benefit communication. The offensive strategy is dominant over the other strategies, though more so among stakeholders than experts. Experts tend to focus slightly more on the 'clean up' and especially 'crisis' strategies compared to stakeholders, meaning that they rate the weaknesses of social media more relevant to deal with than the stakeholders in relation to possible opportunities and threats.

Discussion and conclusion

By its nature, social media offers a communication approach which enforces many of the key principles of effective risk communication (Rutsaert et al., 2013). The goal of this study was to examine how stakeholders and experts in the food domain evaluate the possible opportunities and threats of social media.

Both stakeholders and experts valued the attack strategy most, i.e. the use of offensive policy options exploiting or using strengths to take maximum advantage of possible opportunities. This entails that participants rate the opportunities that social media provide higher than the emerging threats. However, some differences seem to exist between the stakeholders and experts related to the appreciation of the different opportunities. This could be a result of differences in objectives held by stakeholders and experts in the field of communication related to food safety issues. Stakeholders in the food chain might be more interested in upgrading their own value while the main task of experts is public well-being.

Opportunities such as the need to reach a target audience and the high reach related to the popularity are perceived as very appealing according to both stakeholders and experts. Tailored communication should be congruent with individual message receivers' needs and characteristics, skills, abilities and motivations. Targeted communication is a topic frequently referred to in the literature (Barnett et al., 2011; Burger and Waishwell, 2001; Verbeke et al., 2008). Most studies confirm its importance in communication strategies however, practical guidelines are seldom given. An important target group frequently mentioned in the interviews are young people; they are perceived as a high-risk group when it comes to food related issues (McCarthy and Brennan, 2009). According to the study of McCarthy and Brennan, young people mainly struggle with message credibility and a lack of awareness of food risks and benefits. According to Seybert and Lööf (2010) 80% of young internet users (16–24 years of age) in Europe are active on social media which makes these tools very useful to communicate to a younger audience. Younger consumers may be more likely to attend to food risk messages on this channel, particularly if delivered in a manner known to be effective (e.g. making use of viral marketing techniques such as competitions or infotainment). Tools like Flickr and YouTube make it easy for organisations to share pictures and videos, which can be used by viewers on websites, blogs or other social media sites. Online games can provide informal learning environments for a wide variety of people, since they can be made with tailored messages and in ways suitable to reach different audiences.

For other opportunities, stakeholders and experts hold different views. The community aspect of social media is perceived more valuable by stakeholders compared to the experts. Social media makes it possible for consumers to group themselves in communities around a collective purpose and contribute to the production or dissemination of information (Cova and Pace, 2006). This idea of 'crowdsourcing' (Howe, 2006; Agerfalk and Fitzgerald, 2008) requires additional trust in the community and this forms a delicate point for authorities. The loss of control might trigger the fear for dissemination of incorrect or delicate information among the public. Experience with cases such as genetically modified foods, food irradiation, and even functional foods, demonstrates that perceived food safety can drop dramatically when new information is provided without medical or scientific evidence (Verbeke, 2005). Stakeholders might also be more in favour of presumption compared to experts. There was more focus among stakeholders on the benefits of communities taking over their work, for example by sharing news (journalists and media), creating awareness around a specific brand (producers and retail) or inspiring more followers (consumer or non-governmental organisation).

One of the most important opportunities according to experts for the use of social media is communication in times of a food crisis. Rutsaert et al. (2013) also stress this opportunity as being highly relevant for social media as it is the perfect tool to speed up communication. In addition, the opportunity of direct communication with the audience can establish trust and credibility as a reliable information source. Monitoring of consumers during a crisis also can provide valuable input for authorities. For example, Twitter served as an early warning system during the swine flu outbreak in April–May 2009 in Mexico. A review of tweets was helpful to understand public concerns, keywords used and the profile of users who discussed that topic on the web (Kostkova et al., 2010).

Our findings show that social media is clearly viewed as having a positive application in times of a food crisis, however there is also a more negative aspect to consider. Social media may escalate a food crisis situation and create potentially unwarranted panic and hysteria. Emotional behaviour and the lack of a filter are elements that might re-enforce this. The social amplification of risk framework has been proposed as a support for explaining the reason certain risks are enlarged, or indeed attenuated (Kasperson et al., 1988; Renn, 1991). This framework proposes that "events pertaining to hazards interact with psychological, social, institutional, and cultural processes in ways that can heighten or attenuate public perceptions of risk and shape risk behaviour" (Renn, 1991, p. 287). Given its pervasive nature in the public domain, it is likely that social media now plays an increasingly important role in the social and cultural processes involved in potentially amplifying, or attenuating public risk perception. In an unregulated and open network environment, a minor opinion or a local voice could mislead public understanding of risk by disseminating unreliable information and false assertions to the whole society (Chung, 2011).

The results indicate that stakeholders and experts value the attack strategy the highest, although some of the threats also deserve attention. New media have increased the accessibility of content, the amount of content and the number of people who can create and share that content (Freeman, 2012). This increases the risk for information overload (Koltay, 2012) and that is the main issue

stakeholders struggle with. A necessity to reach consumers through these channels is a continuous investment of human resources and time. Experts on the other hand see a preference for traditional media in the allocation of resources as a main boundary of social media use. The traditional way for communicators to spread their message in the last decades was through mass media channels (Noar, 2006). A main advantage is the far reach of these channels but there are also some important disadvantages of traditional media use. Not only does the media transmit official risk messages, they also create and interpret risk and benefit information into a format that is considered to be understandable for the general public (McCarthy et al., 2008). The media choose information to report, not necessarily based on reliable sources but on what seems interesting given the professional limits on space, time and audience capacity (Weingart et al., 2000). The communication of food risks and benefits through a mediator also leads to loss of control. Social media on the other hand are often regarded as more interactive and dialogic than traditional media or a simple website (Schultz et al., 2011). Findings from the present study suggest that social media could fill the gap of direct communication to the consumer.

Social media tools offer the potential to enforce some of the key principles advocated for effective food risk and benefit as well as food crisis communication. There is no doubt that the rapid rise and extensive use of social media and social networking can provide an extension to traditional methods of communication. With approximately 2 billion people having access to the internet in 2012 and a large and increasing percentage of citizens using social media, communication professionals and food and health policy makers are strongly recommended consider their use alongside their traditional outreach models. The results reported in this paper illustrate that a SWOT analysis is a valuable tool that allows to evaluate the perceived usefulness of a communication tool such as social media in food risk and benefit communication. The analysis also provides insight into the future possibilities and emerging threats. SWOT followed by SOR-analysis allows identifying key attention points and prioritising communication strategies involving the use of social media. Results from the SOR analysis indicate that stakeholders and experts may benefit from incorporating social media in their communication strategy. The use of social media will not be the answer for all communication difficulties but there are domains like crisis communication and interaction with consumers where one cannot ignore its possible benefits anymore.

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