

The use of social media in food risk and benefit communication

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The proliferation of social media applications such as online communities, social networking sites, or blogs gives the public new means for receiving, and importantly, providing information. Many opportunities are opening up for food risk communicators by the wide variety of social media applications and the digital environment with enormous abilities for storing, retrieving and reusing information. The global nature of today's food chains asks for a global approach in communicating food-related risk and benefit issues. However, the evolution of social media also presents a number of pitfalls related to information accuracy, trust and source credibility. This paper portrays and comments on the structural changes in communication and discusses on the current state of social media as a possible tool for communicating food risks and benefits.

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Introduction

The last thirty years have witnessed growing attention to the question of how best to communicate risk and benefit in relation to food (Renn, 2008). The European Food Safety Authority (EFSA) defines the ultimate goal of risk communication as: “to assist stakeholders, consumers and the general public in understanding the rationale behind a risk-based decision, so that they may arrive at a balanced judgement that reflects the factual evidence about the matter at hand in relation to their own interests and values” (EFSA, 2012: p. 4). Good communication practice seeks to bridge the divides between scientific experts, policy-makers, health practitioners, industry marketers, and consumers (Barnett *et al.*, 2011). However, it cannot be taken for granted that a target audience will pay attention to information intended for it (Verbeke, 2005). Effective communication requires clear identification and thorough understanding of the target audience's needs and appropriate management of the information provision so that it optimally addresses particular needs and interests.

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 & Sandman, 2001; Rollin, Kennedy, & Wills, 2011). However, this work has not been matched with the development of appropriate, effective and efficient tools for the delivery of such communications. In particular, very little work has been done examining the implications of the explosion of new social media and web technologies in the specific context of food risk and benefit communication. This viewpoint paper comments on structural changes in communication and the potential of social media as a tool for communicating food-related risks and benefits. Challenges in communication, tool use and future research will be discussed taking into account the specifics of a food context.

Emergence of new social media

The online information environment has evolved from a world in which users searched and consulted information (Web 1.0) to a world where they are now able to generate and spread information themselves (Web 2.0). The shift from a content-centric to the new user-centric information environment implies there is no longer an explicit direction of information flow. Instead of the traditional one-way flow of information (from sender or source to receiver or target

audience), receivers are now able to interact through social media with the source, the medium and importantly with each other (Winer, 2009). As a consequence, traditional sources of information lose control over the content and distribution of the message resulting in a more complex communication process which is no longer easy to partition into dissemination or utilisation. A unique feature is that a message on social media is spread by users or consumers themselves while direct contact with the information supplier is minimal (Helm, 2008). The term social media, also referred to as consumer-generated media (Giustini, 2006), covers a wide array of different communication outlets including social networking, video- and picture-sharing, blogs, and microblogs (Tinker & Fouse, 2009) (Table 1).

The attention to social media is growing exponentially. Social media applications like Facebook, Twitter and YouTube are extremely popular and used by millions of people every day. However, the growth in popularity is only one aspect of social media. The increase in the amount of time people are spending on these applications is changing the way people spend their time online as well as off-line, and has major consequences for how people behave, share and interact within their normal daily lives (Nielsen, 2009), where food-related decision-making, purchasing, preparation and consumption traditionally occupy an important place.

News generation and sharing is changing too. Social media opens the era of citizen and collaborative journalism where professional journalists can both create news collaboratively and interactively with members of the public but

also use the public as ‘feet-on-the-streets’ eye witness reporters (Tilley & Cokley, 2008). In addition, social media is becoming a primary delivery platform for news. With the emergence of smart phones breaking news can now be delivered directly to a person, regardless of time or location, with the additional power that the social network of interconnected people acts as a communication network (The Independent, 2011).

Finally, the digital environment provides for a nearly unlimited potential for information storage, retrieval and re-use. The main starting point for accessing and retrieving online information is a search engine (Laurent & Vickers, 2009). Monitoring queries to online search engines, which are submitted by millions of users around the world each day, provides a wealth of information that reflects the “collective intelligence” of a population (Ginsberg *et al.*, 2009). For instance, in 2008 Google developed Google Flu Trends which rapidly became a near real-time detection system of influenza outbreaks in the United States. A close relationship was seen between the number of people searching for influenza-related topics through search engines and the incidence of influenza among a population in a particular region. By analysing queries in near real time, Google Flu Trends managed to detect regional outbreaks of influenza 7–10 days before conventional CDC surveillance systems (Carneiro & Mylonakis, 2009).

A second important mechanism for information retrieval is social bookmarking (Morrison, 2008). Social bookmarking or ‘tagging’ is a practice associated with social media sites that allows individual pieces of information to be easily categorised and retrieved. A ‘tag’ is metadata; a non-hierarchical

Table 1. Description and indication of resources required on selected social media tools (ranked from primarily dissemination to increasing levels of engagement).

	Tool	Description	Time and staff effort	Cost
Dissemination ↓ ↓ ↓	RSS feeds	Real Simple Syndication: a file that contains frequently updated information such as news headlines or blog posts; can be subscribed to using field readers or aggregators	Low	Low
	Image, podcast and video sharing	Sharing of pictures, video or web-based audio or video content on user-generated sites that allow storage, retrieval and commenting on the uploaded content	Low	Low
	Microblogs	Form of blogging that allows users to write brief text updates (usually up to 140 characters) and to publish this information so that a network of followers can view and comment on the information	Medium	Low
	Blogs	Information (text and/or visual) posted on a regularly updated website and displayed in reverse chronological order	Medium	Medium
Engagement	Social networks	Online communities that allow users to connect, interact and exchange information with those who share interests and/or activities	High	Low
Based on: Tinker and Fouse (2009) and CDC (2010).				

keyword assigned to a piece of information. This tag helps to situate an individual piece of information within a broader conversation and allows this piece of information to be easily found by browsers searching for information on the topic of interest (i.e. the ‘tag’). For example on Twitter, hash tags are used to associate the content of a tweet to a particular topic; in the E.coli 104 crisis of 2011, those Tweets labelled with ‘#EO104’ would have been easily retrieved by searching on Twitter for information on the outbreak. Snuderl (2008) mentions that this is one of the reasons why Web 2.0 applications became such a success; it is the users and not the producers who control the way that information is found and used. Tags can assist in ensuring that information disseminated *via* social media applications does not get lost in the mass of information available online. Collaborative tagging has led to a huge amount of user-generated metadata, however questions are raised about the vulnerability to spam and the lack of reliability. This is a reason why search engines like Google might take tagging less seriously and ignore tags for indexing websites (Xiang & Fesenmaier, 2005).

New social media in the food sector

New communication tools have become gradually integrated in – mostly commercial – food-related communications. A landmark was PepsiCo’s decision to skip its annual Superbowl commercial in 2009, and instead invest \$20 million in a social media campaign called “The Pepsi Refresh Project”. The project encouraged consumers to come up with ideas to “refresh the world” which they could submit *via* social media applications (Mashable, 2009). This is just one example of how marketers of international food companies are embracing the power of social media. Viral marketing (also referred to as word-of-mouth marketing) has offered food marketers the potential to send a message to a wide array of consumers with less effort and at lower cost than traditional media campaigns (Kaplain & Haenlein, 2011). This phenomenon entails the development of an online marketing message that stimulates customers to forward this message to members of their social network. This can be in the form of promotions, competitions or a social media version of a ‘brand fan club’.

The extent to which this particular form of marketing would be implemented in the general field of marketing could not have been envisioned when it was first introduced (Rayport, 1996). In the contemporary world of social media, however, viral marketing is at the core of many (mostly large and international) food marketing campaigns. Cadbury, the British chocolate company, is a prime example of a food company effectively using viral marketing to promote their products to consumers. Cadbury has produced a number of advertisements under their well-known banner of “Glass and a Half Full Productions”, which are aired on television but also receive widespread attention on video-sharing sites on the Internet (Sheehan, 2010). The infamous “Cadbury Gorilla” clip and the “Cadbury Eyebrows” clip

had already received well over six million hits and nine millions hits, respectively on YouTube by April 2012 (YouTube, 2007, 2009). These short clips are watched by consumers who enjoy the entertainment aspect of the video and send it to fellow consumers *via* social media applications like Facebook and Twitter, portraying the essence of viral marketing. By involving social media users (i.e. the consumers themselves), a message can be spread effortlessly and rapidly throughout the social media community. However, it is fair to say that the challenge in marketing terms as always is turning a viral campaign from ‘eyeballs’ to purchase.

Whilst the ethical nature of some viral marketing campaigns has been questioned, particularly when the target audience is children and the food in question is associated with possible negative health outcomes (Moore & Rideout, 2007), this marketing technique does highlight an essential component of effective communication strategies: recipients of a message can also become the transmitters of that message and thus, become actively involved in the communication process. In some ways this can be seen as the ‘fan club’ concept in the Internet connected age. This type of marketing is one of the fastest growing alternative media segments, again with substantial current and potential applications in the food domain. Companies whose advertisements are banned on traditional media, e.g. because they may harm public health, are heavily investing in these techniques because of a lack of online regulations (Freeman & Chapman, 2008). In a similar vein, the communication of nutrition and health benefits through viral means might be seen as an outcome in cases where formal nutrition and health claims are rejected, for example following screening by the European Food Safety Authority in the European Union (Verbeke, 2011). These evolutions obviously call for appropriate legislation covering the spread of information through social media.

While private businesses are investing more and more into these techniques, other risk and benefit communicators, such as food safety authorities, have shown so far little interest or appreciation for these techniques (Thackeray, Neiger, Smith, & Van Wagenen, 2012). Nevertheless, during the early summer 2011 outbreak of the EHEC crisis in Germany, social media proved useful in determining the genetic make-up of the organism which had been a previously unknown strain. A Chinese laboratory led the investigation to identify the culprit strain. Online forums developed by researchers and by the World Health Organisation allowed scientists all over the world to feed into and provide information for the investigation. As a result of this collaborative effort supported by online communication media – a phenomenon referred to as ‘crowdsourcing’ – the DNA sequencing of the organism took only two days while in the past this would have taken two to three years (Casey, Hill, & Gahan, 2011).

Some notable exceptions in the area of public health embracing social media include Centres for Disease Control and Prevention (CDC) in the United States who 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). After a recall of salmonella-contaminated peanut butter and peanut products, CDC officials developed a widget (i.e., a piece of self-contained code that can be embedded in a website or software program to perform a specific function) that could be posted on websites and blogs and provided access to a database allowing consumers to enter a product name/barcode and check its recall status. This tool proved hugely popular, with 15.5 million page views recorded during the recall period; 20,450 people added the widget to their websites, blogs, or social networking page (Tinker & Fouse, 2009). The use of social media in the salmonella outbreak enabled greater public awareness of the outbreak and made it possible for the public to be involved in the dissemination of information and thus, become actively involved in communication efforts during the crisis. With this communication strategy, the CDC had effectively empowered the public by employing numerous social media tools (including Twitter, Facebook, online video-sharing sites, podcasts, and blogs) which facilitated two-way interaction and personalised messages. CDC's robust social media presence during this crisis enabled them to dispense valuable, reliable, and scientifically-based information to the public.

New social media in food risk/benefit communication

New social media tools offer the potential to enforce some of the key principles advocated for effective food risk and crisis communication. There has been much work on consumer perceptions of food risks and many theories and principles have been proposed in developing effective communication strategies (Covello & Sandman, 2001; EFSA, 2012). The advent of social media offers a potential way of enforcing these research findings and principles in an applied and practical manner, though the road is not free of pitfalls, notably related to trust and credibility.

Public involvement and interaction

At the core of this new wave of media exists the potential for a communication process which is representative of one of the key principles of risk/benefit communication: the formation of an interactive and participatory two-way stream of dialogue (Covello & Sandman, 2001). One of the major differences between traditional media and social media is that the latter offer a much increased focus on this element of interactivity (Keng & Ting, 2009). Incorporation of the views of the public and relevant stakeholders is of major importance in effective risk management in the food sector. Engagement can transform the public and stakeholders from passive recipients of information, to more active players in the process, which is necessary to avoid damaging side effects of risk communications or over-reactions to perceived hazards (Shepherd, 2008; Verbeke, 2011).

Risk perception has long been considered to be one of the key factors necessary to account for when developing effective risk communication strategies (Fischhoff, 1995). Social media provides an opportunity to gauge how consumers are perceiving food issues and how perceptions may influence their search, reception and understanding of information. Social media provides consumers with multiple avenues to air their views. The different tools available make it easy for everyone to put information, articles, photos, videos or opinions on the Internet and use it as a communication platform. Monitoring online conversations makes it possible to detect upcoming issues at an early stage of technology or product development, and to monitor on-going debates on hot topics like genetic modification, animal cloning, nanotechnology and other novel technologies with potential applications in the food domain (Boehm, Kayser, & Spiller, 2010). Social media also facilitates the provision of consumer feedback, which allows for a more in-depth understanding of how consumers react to current communication of an issue and enables the communicator to gain an understanding of the general public feeling on the food issue in question – an important requirement for the communicator to take into account when making the next communicative step.

Consumers as a source of information

Nathan Huebner, emergency risk communication specialist and lead of CDC's emergency websites, states that social media is more than just a way to reach the public. "It's about the public talking to us. It's also about the public talking to the public" (Tinker & Fouse, 2009). The introduction of social media has allowed for consumers to take a leading role as communicator and source of information. As a result of viral marketing, the word-of-mouth phenomenon has become a much more influential and far-reaching word-of-mouth phenomenon, as highlighted in the quote: "Instead of telling a few friends, consumers now have the ability to tell hundreds or thousands of other people with a few keystrokes" (Mangold & Faulds, 2009: p. 359).

Social media applications make it easy for everyone to put information on the Internet but the nature of the Internet is such that the anonymity of the sender's location, interests, role and identity often lead to concern over the credibility of the information (Mehrabi, Hassan, & Ali, 2009). Given that social media affords all individuals the opportunity to disseminate information relating to food risks and benefits, it is necessary to reflect on the concepts of online trust and credibility. The public tends to rely on food-related information from not only official sources, but also from their friends, peers, and family (Palen, Vieweg, Liu, & Hughes, 2009; Pieniak, Verbeke, Scholderer, Brunsø, & Olsen, 2007). The public also tends to have more trust in sources or people perceived as similar to them, for example fellow consumers. The nature of many social media sites is such that friends, family, and peers can dominate one's social network, thereby giving the

information provided by these individuals increased exposure relative to official authorities who may not be included in one's online social network. Where non-expert non-official information sources dominate a communication forum, there is an increased likelihood for inaccurate information to be spread. Credibility of online information remains therefore a major communication challenge.

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). Social media enables users to interact with information sources and it enables users to talk to each other. The capability of mutual interaction between users and sources may enhance credibility. Bearing this in mind, it is necessary that those responsible for communicating risks should have a social media presence which can act in tandem with public participation in order to ensure that accurate messages are being transmitted to the public.

Food crisis communication

Communication in times of a crisis has been a key focus of risk communication research, with many policy-makers and researchers offering a number of guidelines to abide to when developing crisis communication strategies (Covello, 2003; Seeger, 2006). One such principle is timely communication with the public in order to establish trust and credibility in the information source (Jacob, Lok, Morley, & Powell, 2011). In times of a food crisis, social media facilitates the immediate transmission of important information to as many people as possible (Tinker & Fouse, 2009). However, the distribution of information is not the only task of communicators in times of crisis. An organisation that takes responsibility or expresses sympathy with the victims is regarded as more honourable and understanding. As Schultz, Utz, and Goritz (2011) describe, social media applications are especially useful in this area due to the opportunity of direct communication with the audience.

Another principle deemed to be of importance in crisis communication is that of honesty, openness, and transparency (Seeger, 2006). This not only refers to the content of the message, which undoubtedly needs to be fact-based and accurate, but also the process of communicating the information itself. The very act of providing consumers with information instils a quality of transparency in those doing the communicating (Renn, 2006). Social media offers the opportunity to strengthen this quality of transparency, by allowing communicators to have a voice on many different social media channels, and in effect, showing a strong presence in delivering information when most needed and when most expected. If consumers perceive that communicators are making every effort to get information across, this may build credibility and trust in the message and the communicator.

While social media clearly has a positive application potential in times of a food crisis, there is also another more negative aspect to consider. Social media may itself escalate a food crisis situation and create potentially unwarranted panic and hysteria. The social amplification of risk framework has been proposed for explaining why certain risks are amplified or attenuated (Kasperson, Renn, & Slovic, 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). The traditional media has received attention in the social amplification literature as an important source of information which may act as a potential 'amplification station' by increasing the volume of information, and thus the salience of the issue or event in question (Petts, Horlick-Jones, & Murdock, 2001). Given its pervasive nature in the public domain, it is likely that social media plays an increasingly important role in the social and cultural processes involved in potentially amplifying public risk perception. For example, channels like YouTube make it very easy to post home-made videos online, which may offer a heightened audio-visual impact of news and can make a crisis more dramatic and alive (Mei, Bansal, & Pang, 2010). Visual elements play a substantial role as media triggers in the development of a risk into a crisis (Verbeke, Frewer, Scholderer, & De Brabander, 2007). Thus, social media has the potential to develop a seemingly small scale risk into a full-blown food crisis.

Future challenges

There is little doubt that the rapid rise and extensive use of social media can provide an alternative to traditional methods of communication, especially in the food domain. With approximately two billion people having access to the Internet in 2012 and a large and increasing percentage of citizens using social media, no communication professional can afford to neglect their use alongside traditional outreach models. Social media is opening a window of opportunity for food risk stakeholders, from the early detection and surveillance of food contamination incidents (Newkirk, Bender, & Hedberg, 2012) to the interactive communication of food benefits with the public. Despite the many opportunities which social media present, there are some apparent key challenges which will need to be carefully considered in order to successfully incorporate social media into future communication strategies relating to food risks and benefits.

Dissemination of (in)accurate information

Although an exceptional resource, social media can be a minefield of information which is incorrect or misleading, whether inadvertently misconstrued or intentionally altered as a result of vested interests (Lindsay, 2011; Scanfeld, Scanfeld, & Larson, 2010). In public health communication,

many problems arise related to the spread of misinformation on social media applications, for example vaccination uptake can be negatively impacted by groundless anti-vaccination messages which have gone viral (Fernandez-Luque, Karlsen, & Melton, 2012). The volume of user-generated content that is uploaded on popular social media applications makes it practically impossible for operators to control all the information. Unlike traditional media which operates under a more rigid publishing process of regulated journalism, stricter editorial guidelines, and media watchdogs, few checks are in place for those acting in the capacity of citizen-journalist. However, it is worth noting that in some cases social media communities consist of subject matter experts and that such sites can and do distribute factual, accurate, and valuable information. Additionally, most countries try to regulate the content on the Internet to some extent. Regulation can be justified for the protection of children from sexually explicit or violent content, protecting national security and political interests, safeguarding copyright and intellectual property, and improving computer security such as anti-spam and virus spreading laws (Freeman, 2012). With respect to food, (self-)regulation commitments to limit the exposure of children – not only through traditional, but also new social media – to advertising of products that fail to meet specific nutrition criteria might be a valuable avenue to consider. There will probably be no quick and easy method of countering the inaccurate information available online nor will one ever be able to realistically expect that the same level of regulation over content that occurs in traditional media will occur on the Internet and with social media. Nevertheless, there are some steps which individual stakeholders may take in order to begin to address this challenge. Above all, it is imperative that an organisation, institute or body has an online presence in order to rapidly address developing memes containing inaccuracies and misinformation, thereby ensuring that a momentum does not build up. In order to battle the spread of unreliable information, it will be necessary for food risk stakeholders to actively engage with users online to correct any fallacies.

A resource intensive resource

An active involvement with social media requires considerable resources and effort to feed, correct or control. Not only in response to inaccurate information, but also in terms of ensuring a proactive social media presence, constant monitoring and active dissemination of information and engagement with the social media community is required, which is likely to introduce considerable, long-term expense to stakeholders. The CDC (2010) offers some key guidelines for the successful use of social media in communication strategies, including identifying target audiences, establishing clear objectives and knowing how much can be invested, all of which have relevance to the food communication domain. The CDC report highlighted the importance of knowing your resources and capacity, whilst also identifying the social media tools available

and appropriate for your strategy. Table 1 gives an overview of popular social media tools, showing the continuum from dissemination to engagement, as well as a qualitative indication of the resources generally needed to implement food risk and benefit communication activities using these tools. RSS feeds can be used to establish an online monitoring alert system and give insight on the discussions around controversial topics like cloning or nanotechnology (Ackland, Gibson, Lusoli, & Ward, 2010). Microblogs, with Twitter as the most important example to date, can be utilised for the same purpose but also offer the opportunity for interactivity with the audience. Being present on these platforms as a credible source of information can increase visibility, not only to customers, consumers or the general public, but also to key opinion formers like popular bloggers and journalists (Lariscy, Avery, Sweetser, & Howes, 2009).

Conclusion

The explosion of social media in the last years has opened perspectives for its use as a platform for communicating about food risk and benefit issues, particularly in the commercial sector, but also for food policy-makers and other stakeholders. By its nature, social media offers an approach to communicating which enforces many of the key principles of effective risk communication such as involving the public in the communication process. However, use of social media as a communication tool is not without its pitfalls and challenges. The present paper provides insight on the challenges and opportunities associated with such platforms as well as possible pitfalls. Challenges for food- and communication-related research, food marketers, food policy-makers and public health authorities require further attention and investigation.

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