



THE FUTURE OF FOOD SAFETY



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Effective communication and engagement with the public about food safety and quality issues in the digital age.

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Integral to the development of safe, healthy and sustainable food systems is engagement of consumers and other food system actors in the promotion of national, regional and global food security in its broadest sense, including the dimension of food safety. The need for interactive communication with the public about food safety and quality issues has been recognised and is established in both regulation (FAO ¹) and communications practice (FAO/WHO 2016 ²). Effective risk and benefit communication about food issues is important from the perspective of optimizing consumer protection associated with food consumption, increasing societal trust in those institutions responsible for assessing and managing (real and perceived) food risks and benefits, promoting healthy dietary choices, and societal engagement in sustainable food production and consumption practices. The need for effective risk-benefit communication is associated with a range of food security issues, including, *inter alia*, agrifood technology innovation, contamination of foods with chemical, microbiological, or physical hazards, the occurrence of a food crisis (e.g. following the discovery of food fraud), new scientific knowledge about food issues, reduction of food waste or unsustainable production and consumption practices. Food related risk-benefit communication must address positive and negative socio-economic impacts (e.g. employment, food costs, or rural livelihoods). These impacts are dependent on local cultural conditions, which need to be taken into account when developing communication strategies. Understanding these requires information exchange between all stakeholders, including the public. The development of effective engagement practices with society will help empower all consumers to make healthy and sustainable food choices, and ensure that regulations, mitigation strategies and policies take into account societal preferences and priorities. Best practice in risk-benefit communication is reasonably well established (Frewer et al, 2016³), and includes the need to take into account the characteristics of the target population; the contents of the information; the characteristics of the information sources; communication timeliness; and societal concerns and priorities in relation to the issue in hand.

Developing effective societal engagement at scale has been problematic in the past. Technological advances and new communication tools and services have potential to provide powerful opportunities to engage and involve many stakeholders across different

¹ FAO, <http://www.fao.org/3/a-x1271e.pdf> accessed 3.1.2019

² FAO/WHO. (2016) Risk Communication applied to Food Safety handbook. <http://www.fao.org/3/a-i5863e.pdf>

³ Frewer, L. J., Fischer, et al. Risk/benefit communication about food—a systematic review of the literature. *Critical reviews in Food Science and nutrition*, 56(10), 1728-1745.

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geographical locations in interactive dialogue. Traditional methods of consumer engagement (mass media, conferences, meetings etc.) can be complemented, although not replaced, by these technological developments, which can rapidly be adapted to the information requirements of individuals and groups. Digital communication tools can be highly personalized, and allow for interaction with institutions providing communication through virtual reality simulations or gamification. Social media can also facilitate industry and government accountability for food safety and quality. “Crowd-sourcing”, where members of the public use digital media to provide information about emerging food issues or consumer behaviours can facilitate identification of existing or emerging food issues. At the same time, personal data privacy and the ethics of information exchange must be taken into account by communicators. In addition, despite the power of digital technologies to engage broader society in food security issues, not all members of the public have access to social and other digital media.

Strategic issues

1. Members of the public may use social media to report or discuss a particular food issue but may not report this to public health authorities or food producers. Social media may therefore provide information about food issues which is not made available through formal routes.
2. Citizen science and social media analysis can be used to gain insights into people’s priorities for different risk mitigation strategies or policies. For example, the information available on social media may provide insights into people’s food related risk and benefit perceptions which extend beyond health or environment, including ethical or value based concerns.
3. Information harvested from social media can be used by governments and industry to develop effective communication, which accommodates socio-cultural and economic differences across different locations, as well as consumer preferences and priorities. For instance, analysis of food safety discussions on social media may help identify the emergence of a food safety threat. However, not all social media discussion is geo-locatable, or verifiable. At present big data analytics cannot adequately address emerging risk identification without additional interpretation by human researchers. Developments in machine learning promise more accurate issue identification in the future. Understanding social media “influencers” is important as they may frame public discussion.
4. Institutions and industry should be aware of the risk of “misinformation” being provided by to social media by different stakeholders and vested interests. Despite scientific assessment of a body of evidence regarding a particular food issue, contrary information may have been presented on social media, which has constituted a barrier to communications on scientific information. Proactive and credible information provision, based on scientific evidence, which also takes into account the values and concerns of consumers, will build societal trust in messages.
5. Digital technologies can be used by members of the public to provide information of relevance to developing and refining public or environmental health policies, e.g. in relation to dietary preferences, plant or animal disease identification, or agronomic challenges such as slow onset disaster identification (e.g. drought). To be effective, digital “education” may be required to ensure these new data collection methods are adopted by the public, particularly for population groups inexperienced in using digital technologies.

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6. Ensuring endorsement by a trusted source (such as an intergovernmental agency) within social media may help the public identify messages are underpinned by scientific evidence.
7. Rapid responses to an emerging food issue (whether identified as an emerging issue through scientific assessment processes, or an issue of public concern identified on social or traditional media) must be a priority if trust is to be developed and maintained. If there is uncertainty about the food issue under consideration (e.g. in relation to public or environmental health) this must be communicated, as must actions being taken to reduce the uncertainty.
8. Information needs to be updated as soon as the situation changes, which will also contribute to the development of trust in the social media source, and prioritization over other sources by consumers. Digital communication tools can rapidly provide new updated information. At the same time, failure to provide such updates as quickly as possible via social media sites may compromise information source trust and credibility.
9. New digital technologies can facilitate consumer protection through improved tracking and tracing of problematic foods and ingredients. An example is provided by increasing ability to targeted food recalls. With an increasing number of consumers buying food and paying digitally either at the supermarket or on Internet, it is becoming technically possible to recall hazardous foods by specific contaminated lots by sending an alert email to potential consumers. Similarly, consumer claims about food purchased online can be monitored and analyzed in real time by the online market portal, facilitating rapid alerts and recalls should a problem arise to those consumers specifically affected. As well as reducing public health impacts, and promoting consumer trust and confidence in the supply chain, more effective and targeted recalls are potentially economically advantageous to producers and suppliers as only affected products will be withdrawn.
10. Not all members of the public have access to digital media, e.g., economically disadvantaged groups, the elderly, individuals with learning disabilities, or who live geographically remote areas. Furthermore, in a crisis situation, electronic communication channels may be disrupted. Traditional communication channels (e.g. television, radio, leaflets, and interpersonal communication via health services) must kept active and used in communication about food related issues.
11. Social media are rapidly evolving, and different media may attract different demographic and interest groups. It is important therefore to monitor the emergence and content of new media and identify their potential audiences. Communication using different digital platforms will need to take account of potential source and user differences to ensure content is relevant to end-user needs and preferences.
12. New developments in virtual reality, where potential food-future scenarios can be demonstrated and explored by consumers, and gamification (e.g. integrated into smartphone Apps), will provide communication tools regarding potential policy or individual behavioural changes. E.g., gamification has proven effective in motivating consumers to eat more vegetables, promoting of effective food safety behaviours in the workplace, or as a farm level decision-tool to facilitate identification of agronomic inputs to optimize production and environmental health. This communication approach can be extended to other areas (e.g. domestic food safety practices). Integration of data collection via the digital platforms will improve societal engagement with food policy issues. It is relevant to measure the impact of digital technologies in relation to food issues. However, measuring impact may not always

be straightforward. In relation to food recalls, the “success” rate (e.g. the % of a contaminated product recalled) can be assessed. Monitoring “trends” in food choices as expressed on social media can be correlated with actual food consumption in relevant demographic groups.

13. Discussion of agrifood policies on social media can also be analyzed with respect to consumer sentiments, approval or disapproval. The latter is technically difficult at present but this may improve in the near future as data analytics become more advanced. However, in order to keep abreast of analytical capabilities, it is essential that institutions employ professionals with appropriate skills in the relevant analytical sciences.
14. Legal and ethical issues are becoming increasingly relevant in relation to the processing of very large amounts of data from both individuals and populations. E.g. the EU General Data Protection Regulation 2016/679 (GDPR) addresses the processing of the personal data of all citizens of the EU and EEA including the export, collection or processing of its citizens’ data anywhere in the world. The GDPR recognises, *inter alia*, the potential of “Big Data” processing to impact on personal privacy. There are also ethical issues linked to the impact of very large scale collection and analysis of an individual’s data on personal privacy, the “right to be forgotten” and the risks of behavioural or emotional manipulation by potentially malevolent sources, including potential impacts on democratic political systems. The use of data collection processing and analysis to modify food related consumer behaviours has the potential for beneficent and malevolent application, indicating that ethical considerations must be addressed as part of the communication processes.

Conclusions

Traditional methods of consumer engagement, such as mass media, conferences, meetings and other face-to-face interactions, can be complemented by digital approaches to societal engagement. These communication tools can be highly personalized, increasing the relevance of communications to specific audiences. Virtual reality or gamification may improve communication about, and consumer engagement with, food related issues. Engagement, knowledge exchange, and impact analysis of food communication, can be enhanced through digital media. However, institutions and industry should be aware of the legal and ethical aspects of data privacy issues. It is important for food system stakeholders to keep abreast of new developments in digital platforms and data analytics, at the same time ensuring that these technological advances do not exclude some members of society from engaging in communication and dialogue with the public and private sectors in relation to food security issues.