The shifting psychology of food safety: from sensory evaluation to a cognitive assessment

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Abstract

Understanding the psychological basis of food safety assessment in an era of food-borne infectious diseases becomes paramount. With globalised food supply chains, consumers have little information and oversight regarding the source of their food ingredients and are likely to feel concerned about the loss of control over food hygiene and safety issues. As a result of the modern food consumption patterns and international supply chains, there is a shift from sensory evaluation to cognitive assessment of food safety. This short essay assesses the sensory versus cognitive evaluation of food safety. As a result of such a shift, a crucial aspect in food safety perception is the outstanding question of whether the public understands modern food safety systems. Despite an effort to reduce consumer uncertainty when buying routine and exotic food items, there has been a significant shift from a direct safety assessment to an indirect information processing paradigm. Moving away from sensory to cognitive assessment leads to higher information load that may not serve to ensure consumer confidence in food safety. Possible solutions for an effective approach to food safety communication need to account for several real-life cognitive and behavioural constraints.

Keywords: Food Safety, Psychology, Sensory Evaluation, Cognitive Load, Behavioural Biases, Consumer Behaviour

Humans and other animals detect food in their environment through sensory systems. Most animals forage to assess the availability of food sources. Within the sensory modalities, there are well-established mechanisms to detect safe versus unsafe foods. Human behavior has evolved through the centuries to avoid pathogen and parasitic infections. Higher primates and humans rely on multi-sensory (visual, olfactory, gustatory) food cues to ascertain if the food is safe to consume or not. This is especially true in the natural environment when food of various origins (plant, animal, bacterial, fungal) is available to sensory evaluation.

In a natural setting, humans will likely assess food safety primarily through visual inspection (colour), smelling (rotting) and taste (bitter, pungent), touching (texture) and (tapping) sounds to detect edibility and spoilage). Sensory evaluation dominates the safety and quality assessment, wherein sensory inputs regarding spoilt food items result in a response of emotional disgust. Detecting pathogen threats and avoiding disease through unsafe food items is critical to human survival. Certain perceptual and cognitive mechanisms through aversive responses towards unhygienic and risky food items serve as warning systems to reduce food-borne infections. The behavioral immune system (Schaller & Park, 2011) constitutes a set of psychological adaptations to help detect pathogen threats and avoid diseases through the consumption of unsafe food items. Such proactive behaviour guidance systems work flexibly and rely on sensory and social cues. Core disgust mechanism forms the regulatory system in humans to help engage safely with unknown food items. Individuals report disgust towards a variety of food stimuli such as decaying fruit and vegetables, poor hygiene, mold, animal flesh and visible contaminants. Such an evaluation is carried out using senses of touch, smell, sound and visual inspection resulting in moderate to pronounced detestation of particular food items. Core disgust serves a pathogen avoidance promoter in the context of risk prone (offensive) food through emotional distancing and activating threat-related behaviour.

In a social setting, safety related disgust information is passed on to other members of the community through social exchange, culturally dressed ideas and actions. Much of this is through description of sensory evaluations done by experienced members and is considered reliable. Socio-moral disgust, acquired through social acculturations and together with core disgust, plays a fundamental role as a safety mechanism to avoid contact with contaminated

food. Such disgust is commonly seen in consumers' exhibiting germ aversion, food neophobia and picky eating. The socio-moral disgust mechanisms act as a socially acquired defense system, thereby providing a sensory barometer towards unsafe and unhygienic food and help reduce many food-borne illnesses.

Food disgust sensitivity varies with age, exposure to novel food items, gender, eating preferences and food waste frequency (Egolf, Siegrist, & Hartmann, 2018). Socio-moral disgust mechanisms shape people's food risk assessment and behaviour in a functional and dysfunctional way and may not always serve the disease avoidance role. At times, such disease avoidance threat (disgust) mechanisms are overridden by cognitive load in industrialised food consumption practices. As a consequence of the industrial revolution, humans have experienced increased disconnection from nature (Axelrod & Suedfeld, 1995) and a gradual shift towards new and unfamiliar urban dwellings (McMichael, 2001) has occurred. Humans are spending less time with plants and animals thereby resulting in reduced microbial exposure (Katcher & Beck, 1987).

In the industrialised food system, the sensory connection with food and exposure to raw food is becoming increasingly rare. A vast majority of food products today are packaged for convenience and safety. As a result, consumers have no direct access to sensory evaluation of its safety and quality and have to rely on cognitive information. Parceled within the modern global food supply chain, consumers cannot get complete information about hygiene and safety from merely the appearance and sensory assessment of the products. How do humans assess food safety in a supermarket where food is available in a packed, sealed and processed form? How reliable are the sensory evaluations for safety purposes in the modern food system?

A quick sensory evaluation, in particular the colour, size, shape, weight and texture reflect the quality and safety aspects of food items. Ripeness, aroma, flavor, oral texture, fat and moisture parameters could be discovered using sensory assessment. However, many such evaluations may be more indicative of food quality rather than hygiene risk. **Tasting** food items to ascertain freshness or spoilt quality may be a common behaviour but this may not be a reliable indicator for safety. Raw, uncooked and unhygienically stored food may not

always taste bad. The concentration of pathogens to cause illness may differ across food items and are subject to changing levels of food risk due to storage and contamination factors. The sense of smell in humans provides a quick warning against poisonous fumes and pathogen infested food items and is driven primarily by adaptation (prior experience) and disgust mechanisms. Much of the smell mechanism also operates to assess qualitative aspects of food.

Smell, though a critical sensory system in mammals, may be an unlikely indicator of food safety risks in modern processing-heavy food types, many of which may not always characteristically smell bad when spoilt. **Touch** could also help people detect the pathogen risk through sliminess, texture change and plumpness. Despite such evaluations, many food items could contain pathogens that cannot be sensed through touch. At times, colour of food items can indicate if they are unripe, undercooked, burnt, stale or spoilt. Artificial colour enhancement to increase qualitative acceptability aspects such as texture, performance and stability of colours to signal high quality of food that consumers identify and feel comfortable which can further hide the hygiene related information. As more and more food products undergo processing to enhance taste and freshness, mere visual inspection for detecting pathogens isn't a reliable method. Several microbes may not affect the sensory qualities (**look, smell and taste**) of the food and yet may cause illness. In addition, some unpleasant smells from food items due to certain bacterial action may not necessarily be pathogenic. In such situations, what do consumers do when their own sensory evaluation of safety is either unavailable or cannot be trusted?

At times, sensory evaluations through smell or **visual inspection** may not be sufficient, as not all pathogens and their concentrations are detectable through sensory means. There are many instances where food colouring prevents detection of spoilage, thereby rendering visual detection useless. The qualitative assessment of food quality remains sensorially-driven and much efforts are made by food business operators (FBOs) and manufacturers to enhance sensory characteristics that enhance flavour and marketability and consumer demand of food items. In contrast, consumers in a globalised food supply chain are increasingly less likely to be able to smell and detect the safety of foods that they consume using sensory modalities. It is also quite hard to feel the optimality of temperature levels in the refrigerator for correct

level of chilling. It is also hard to detect microbes just by visual inspection, especially in animal-based food products such as milk, meat, molluscs and eggs. There are differences between visually clean and hygienically clean surfaces and food items that are amenable to tests through scientific methods. Understanding such differences between visual and hygienic cleanliness are critical for consumers' food safety.

Sensory evaluation relies on individuals or group of consumers and there might be significant differences due to age, frequency of product use and gender, both at individual and group level in detecting hygiene risks (Stone, 2018). With increased demand for finished and ready-to-eat food across the urban landscape, highly processed food items are increasingly flooding the global markets. It is reported that people ignore safety risks just to satisfy their palate in social-adventure contexts, while at other times, people ignore the food safety guidelines because of immediacy of effect as well as their perceived control over risk (Berg, 2000). To further compensate for the missing sensory connection, there is an increasing trend towards closing this gap through two means—using artificial sensory enhancers to provide quality assessment and providing cognitive information regarding safety aspects. There are several aspects to food safety including toxins, adulteration, as well as hygiene related contamination issues. Here, we discuss the consequences of moving away from a sensory evaluation of hygiene issues and the consequences thereof.

Shift towards cognitive assessment

When we buy a coffee or a sandwich from a branded chain, with no fear of being poisoned or cheated, we put ourselves in the hands of FBOs. Food outlets are more than just outlets for satiating hunger pangs or social outings in a neighbourhood. They carry a high public health wager, with potential for a major outbreak (depending on the size and popularity) in an increasingly global supply chain for raw materials and processing methods. Food safety is a multi-pronged issue that intersects public health policy along with commercial and marketing aspects. Food inspectors, retailers and consumers form the important agents in this process. Foodborne outbreaks have been increasingly recognized as a complex result of growing food consumption in public settings, globalised supply chains and increased awareness regarding the risks in the public health settings (Lynch, Tauxe & Hedberg, 2009).

Two factors have played an important role in this shift away from sensory evaluation of food hygiene, both driven by globalisation of food. Firstly, the increased availability of international and exotic food items with increased demands by consumers that are persuaded by trends and the food media landscape. Increased competition within the food industry to expand their market reach, driven by increased profitability and customer base, propels the demand for new food products and ingredients from exotic locations. A consumer in such contexts is seldom equipped for the sensory checks of hygiene of exotic food items and ingredients.

Secondly, and relatedly, the globalised supply chain of both local and international food items, brought about through reduction in trade barriers, need for extended shelf-life, lower production and distribution costs results in the need for advanced levels of food modification. Food obtained through globalised supply chains undergoes a variety of preservation and treatment protocols to enable transportation, shelf-life and quality aspects (colour, texture, taste). Such measures include adding flavourings and stabilisers, tamper-proof sophisticated packaging, sealing, and physio-chemical processing of food items and ingredients. In such circumstances of food modification, the hygiene risk evaluation shifts away from sensory to cognitive information where the end-user consumer is informed about the processes but cannot detect hygiene risks by sensory means. Food contamination due to heavy metals, chemical adulteration, residuals, allergens, biotoxins as well microbial infestation may not always be detectable using sensory methods. In such cases, only laboratory level analyses can detect the presence of adulterated materials or the microbial presence.

The shift from the sensory evaluation to a more cognitive assessment of safety risk is achieved through various means, with primary thrust on cognitive information and public health regulatory frameworks. Consumers are informed through many written and symbolic means of chemical and microbiological safety analyses, as well as results of official inspections by public health authorities. What remains to be seen is to what extent these mechanisms influence food safety related perception and choices in modern contexts.

Consumers trust in food safety is also dependent upon how they perceive the performance of the local food control authorities and trust the systems in place. Any government or regulatory agency would want that terms of products and services offered to consumers be clear and intelligible. To ensure reliable levels of food safety, this issue is paramount since the

consumer is mostly unaware of the 'farm to fork' processes involved in food production, preparation and consumption. Overly complex and lengthy or excessively simplistic terms can lead to consumers either missing or misunderstanding the key points.

Over the last several decades, there have been improvements in food safety measures by industry and governments. In the 1990s, when an E. Coli outbreak shocked the food industry, it led to an increased focus on food suppliers to ensure safety. The outbreak caused a major downward shift in consumer confidence towards food safety. This led to significant changes in food safety measures instantiated by food producers, food business operators and regulatory bodies across board. For instance, in 1996, the United States introduced the reduction of pathogens as a criterion for improving food safety and molecular techniques were employed to detect pathogenic risks. Prior to this, traditional microbial counting methods were used to assess quality that served as a proxy for safety. Increased deployment of latest science and technology methods have enabled higher levels of food safety at all stages. However, the consumer has not been a dominant stakeholder in implementing these changes and hence is not privy to the changes, enhanced safety measures and their outcome. Different countries have had different food safety challenges (adulteration, chemical contamination, microbial contamination) and at times, these differ across regions within the same country. For instance, two separate agencies in the United States are responsible for food safety assessment and their respective inspection frequency, and criteria differs for food items even if they are from the same manufacturer.

Despite the increased technological availability to assess food safety, long supply chains, complicated techniques used in food processing, increased cognitive loads regarding the reliability and credibility of safety assessments makes it harder for the consumer to maintain high confidence. Increasing information asymmetry regarding sensory versus cognitive evaluation leads to confusion amongst consumers. When food is obtained through the aisles or freezers in a large supermarket chain, sensory evaluation gives precedence to the cognitive and emotional cues, such as labels, symbols and attention-grabbing advertisements for quality and safety. Further, the supply chain of processed food puts the responsibility and management of food safety in the hands of unknown, and at times, unreliable players.

Public health authorities across many countries face increased burden of food-related illness and emerging foodborne hazards FAO (2003). World Risk Poll (2020) shows that 60 percent of the world population is concerned about food safety and 17% of the population has faced serious harm from food. About half of the Western European population reported concerns about food hygiene risks (European Union, 2019) while over 3/4th of population in Asia Pacific region are concerned about illness and death caused by food contamination (Zebra Technologies, 2020). In many countries, public health authorities have introduced food inspection reports, some of which are made available to the public. Despite the existing hygiene-based ranking, public perception of food safety hasn't increased. Food safety incidents receive considerable media attention and have significant public health consequences. An outbreak can cause widespread panic and loss of confidence in the safety of food and effectiveness of public health authorities. During the times of foodborne outbreaks, consistency in reporting is critical for the public to comply with safety and maintain trust.

Consequences of moving away from sensory evaluation

Safety assessment: As the food system is increasingly industrialised and mechanized, connection with the land (and soil) is broken. When consumers are ignorant about the source, transportation, processing and assessment standards of their food, their perception of food safety is compromised. When children in modern urban cities are asked, where does food come from, they are more likely to state 'from the supermarket'. As images of big (container) trucks bringing the weekly supply to the supermarket dominate the local landscape, more and more reliance on cognitive information is inevitable. Objective tests at times reflect one particular attribute of a food product rather than its overall hygiene aspects (Mihafu, Issa, & Kamiyango, 2020).

Food coming from a distance: As food operates in an industrialised assembly chain, more and more focus will shift to a cognitive assessment as opposed to sensory evaluation. When food items are grown or produced in various corners of the world, in different climatic and social contexts, grown and processed by unknown agents, how can we ensure the safety of the supply-chain? In such a scenario, public health consequences of food contamination are

enormous. Several government agencies across the globe are increasingly concerned about safety issues, beyond the hygiene aspects.

Outbreaks: In case of food-borne disease outbreaks, tracking and tracing the source of pathogens or contamination is harder with globalised supply chains and multi-ingredients. In such contexts, with a shift away from sensory evaluation of safety, it is not surprising that consumers will cultivate an assumption of continued vigilance of safety parameters, something that may not be the case. Even while consumers may want more reliance on regulation, food manufacturers are not necessarily supportive of increased regulatory measures. There has been increased demand to replace the government oversight with industry oversight and this may have risky consequences for food safety (Kindy, 2019).

Behavioural response: When we move away from sensory evaluation of safety, the human behavioural immune system may not work efficiently. It may be that the psychological mechanisms that allowed humans to detect and avoid foodborne risks and pathogens, may undergo plasticity. Instead of a threat response towards food items, it may happen that the particular response gets shifted towards behaviour. In the globalised food supply chain, the move towards cognitive evaluation finally rests with governance, regulation and legislation. Besides hygienic safety, allergen related safety becomes a sensitive point in the regulation of processed food items. In the absence of specific regulation regarding allergens, food safety risks in terms of cross-contamination through allergens remain a policy challenge in many regions of the world. Although food outlets and manufacturers disclose information around ingredients and the potential for cross-contamination, allergen related food safety remains the individual consumers' responsibility. With increased cognitive load, consumers may not read and interpret safety risks correctly. Beyond information disclosures targeted at consumers, there are likely no regulations regarding allergen management in many restaurants.

Digital shopping of food and digital information

Further, rapidly evolving online food shopping and delivery depends critically on cognitive load, top-down information processes and limited visual processing oriented toward quality related advertising rather than safety aspects. Consumers are likely to completely ignore or assume hygiene and safety issues in digital food shopping. Heavy reliance and response to

symbols and icons become the norm when the digital marketplace competes for consumer attention, biased towards qualitative aspects.

Recently, during the Covid-19 pandemic, it was reported that hygiene inspections are being made virtually through digital means in the UK. Although this remote inspection method is in trial mode currently, and may not be suitable for all FBOs, it is proposed as an innovative solution for the future. This is another step away from physical examination of hygiene and safety, and further replaces sensory mechanisms. Through digital means, a quick remote inspection of premises might be easier when site visits are not possible, or are infrequent due to long distances, and in case of a lack of resources. Virtual evaluations may have some time-saving benefit, but offer limited means to evaluate cross-contamination, pest control and temperature measures, thereby limiting their efficacy. Remote inspection, when combined with a physical examination may actually turn out to be a good compliance measure.

There is an increasing trend towards sharing of information and apparent reliance on social media for food safety risk. Regarding this, Henderson et al. (2017) showed that both food regulators and food industry representatives are enthusiastic about the rapid transmission and bi-way channel benefits of using social media for food risk communication, with the caveat of loss of information control, credibility and sensationalism. There is a risk of information loss due to agenda driven dynamics of social media, possible sensationalism and potential for distortion, panic and loss of consumer trust regarding food safety related news. When on social media, the obligation to check for authenticity of news as well as the significance and reliability of news on food risks rests with the public/consumers (Westerman et al., 2014). Food regulatory authorities may not have effective control over online information, especially in the context of retweeting and repackaging of news (Rutstaert et al., 2013). Information overload through social media channels decreases the likelihood of both engagement and actionability.

Limitations of cognitive evaluation of safety: Is it understood easily and reliably?

A shift of threat away from the sensory to the cognitive sphere leads to changes in consumer behaviour. When threats become more cognitive, little reappraisal is possible, and consumers

become more susceptible to rumors, likely resulting in anxiety and panic related to food safety. In the context of ambiguity about safety, consumers are likely to rely on unrelated and biased information such as food prices and advertising. The higher price of a food item may be read as higher safety by a significant number of consumers. Other certifications and symbols like organic and health related advertising (reduced salt, sugar, fat content) could also confuse consumers into a safety zone. Cognitive biases such as anchoring effect could play a significant role in such misinformed consumer beliefs and subsequent behaviour (Northcraft & Neale, 1987; Tversky & Kahneman, 1974).

The system of mandatory disclosure of hygiene rankings has transformed the roles of consumers and has put them in a decision-making role in the cognitive food safety system (Nielsen, 2006). The shift in consumers' role regarding food safety judgements may not always go well with the FBOs and retailers. Due to limited knowledge and personalised interpretation of hygiene ranking procedures by consumers, food retailers would not consider consumers as a reliable entity within the hygiene and safety system. Despite mandatory requirements for hygiene rank display for consumers, weak compliance and repeated violations are reported by FBOs (Kettunen et al., 2018). In different countries and contexts, the inspector rankings may reflect a variety of extra-hygienic factors such as food labeling, additives and FBO facilities. In some countries, inspector ratings not only take into account hygiene standards, but other issues around traceability and transparency across the supply chain. Eatery hygiene ranking may not provide sufficient information about the type of risk to individual consumers (Vainio et al., 2020). In some contexts, food inspectors may not test the hygiene and safety of water and raw materials that FBOs use for food preparation and such information may or may not be known to consumers.

Cognitive systems such as food safety symbols are subject to behavioural biases (Awasthi, 2021). In the context of slow and fast decision making, relying on the slow and deliberate cognitive system for food safety is a challenge for consumers, especially in situations where physiological and emotional factors trigger eating behaviours. Increased cognitive load (attentional allocation) to information regarding food safety makes it harder for consumers to take a call regarding hygienic aspects of food. Consumers may confound food safety with a variety of non-hygiene or safety factors and a high cognitive load could result in compliance

failures and compliance burdens for both FBOs and consumers. Ineffective cognitive information may affect the consumers negatively with significant costs. The level of assessment, uniformity and enforcement of food safety standards across the country and the globe also affects consumer perception and confidence.

This becomes much more complex when advanced technologies have been adopted in food production, such as genetic-modification, complex additives, and functional foods (Wachinger et al., 2013). A change in risk related information affects consumer trust. Liao (2018) indicates that changes in food risk information induces uncertainty in consumers. Through the hygiene ranking system, the customers may obtain an insight into the attitude of the FBOs towards hygiene. It is not a guarantee for safety, but serves as a window into food safety mechanisms by keeping the FBOs on their toes (Awasthi, 2021).

Possible way forward

Food safety risks posed due to chemical adulteration, residuals, allergens as well microbial infestation may not always be detectable using sensory methods. In such circumstances, stringent testing outcomes need to be conveyed to the consumer in a reliable, trustworthy and easy-to-understand information format.

Organisational approaches: An assessment of public perception and attitudes to food safety risks should help the public authorities put in place effective food policy and relevant strategies for safety related communication. Existing research shows that public attitudes regarding food safety are influenced by hygiene information, food prices and cognitive limitations (Hoque et al., 2018). Despite relevant training and use of HACCP, food handling staff don't always follow the safety guidelines. This is where the science of human behaviour becomes crucial. An effective behavioural change program to improve food handler behaviours will be critical to ensure higher levels of safety and inculcation in the long-term. Public perception of food risks depends predominantly on the psychological assessment and interpretation of food related threats, most of which are sensory in nature. Food safety experts and risk experts, however, rely on the physical (scientific assessment) of food related threats (Lave & Menkes, 1985). It has been argued that a significant gap exists between perspectives of the risk regulators and consumers (Spark & Shepherd, 1994). Employing

informed food choice decisions by consumers is hard because of inaccessibility and miscomprehension of relevant safety information (Yeung & Morris, 2001). Inclusion of relevant behavioural nudges to influence and modify consumer attention and behaviour towards hygiene-ranking of food outlets may be an important step. In a recent review, Manning and colleagues (2019) have contended for a more holistic food safety management approach with increased focus on organisational cultures and framing of operations and efficacy to ensure food safety. Cognitive, behavioural and organizational factors are critical in promoting and maintaining food safety.

Communication and behaviour change: An effective communication strategy should focus on the consumers and their needs. Risk communication must be based on consumer concerns, risk perception, motivational and behavioral needs rather than mere technological reasoning of safety experts. At times, hygiene compliance is not so much about ignorance, but about neglect and contextual factors such as behavioural and cognitive biases. Many consumers are aware of the food safety risks associated with eating certain foods, however it is hard for them to change their habits when such consumption is situated in a socio-cultural context that allows the perpetuation of such habits. Identifying the cognitive and emotional biases to develop a behaviourally-wise communication strategy may help attract consumer attention and direct their behaviour towards safer food choices.

Building a narrative and utilizing story-telling helps people relate to the actual situations rather than providing mere cognitive information. Use of food safety symbols such as hygiene reports could be improved and streamlined. It will help to reduce the cognitive load, and perhaps allow consumers to use some (or more) of their sensory evaluations when possible. At times, the hygiene reports seem to just to inform the consumer without any specific risk information and their role needs to be examined to be ascertained as an effective tool for behaviour change. The role of disgust in food safety cannot be ignored and must be embedded in regulatory framework. Disgust due to hygiene and safety issues brought about the Federal Meat Inspection Act (FMIA, 1906) and the Pure Food Act of 1906 in the United States (Rivera-Aquino, 2021).

The gravity of the risks is not apparent from mere cognitive information. This can be easily seen in the case of the ongoing COVID-19 pandemic that has its origin in food markets. Different consumer groups have differing levels of risk perception, modulated by socio-demographic factors (such as age, gender, education) and a one-size-fits-all approach may not be effective. Invoking reminders of personal episodes of food poisoning could serve as a useful reminder, utilizing personalized messaging contexts for consumers to take risks seriously. Guided by a behaviorally-informed approach, the framing of information should be assessed for relevance and specificity across target groups.

The appropriate medium of communication (whether electronic or print media) plays a role in whether consumers will pay attention and absorb the message or not. Food ordering apps and outlets could serve as critical entry points in the dissemination of knowledge. It is critical to note that actionable advice is often missing when food safety risk information is provided through hygiene rating schemes (Awasthi, 2021). An effective method should include good practical do's-and don'ts advice on food safety.

Assessment of biases and strategy development: It is critical to design a behaviorally informed food safety assessment model that enables the FBOs, public health authorities and consumers effectuate a dependable food safety culture. The triangulation approach of food handler behavioral training (that is cultural, attitudinal, hygiene-knowledge based), public disclosure tools (such as hygiene inspector reports) and consumers' perception and behavioural biases (attentional load, cognitive limitations, reducing sludge) is necessary to ensure global food safety. Young consumer groups could be an important target for food safety education, as their risk-taking tendencies combined with poor knowledge and lack of experience may result in adverse health outcomes. Behavioural biases such as overconfidence, availability heuristic and status quo bias need to be examined in target population groups for effective behaviour change strategies towards food safety.

It is important to acknowledge that food safety risk assessment is probabilistic rather than absolute and consumers are not always aware of the processes and the quantum of risks that they face. It is not unlikely that consumers may harbor a certain degree of uncertainty and confusion regarding food safety, especially in unfamiliar settings (Lofstedt, 2013). An effective

use of social media could be of great asset for direct and wide-ranging communication with consumers. The presence of food safety authorities through authenticated channels on social media increases public trust, could fill-in any communication gaps. It is also useful in understanding the safety attitudes and concerns, level of food safety understanding and communication needs of the consumers. The capacity of retransmission on social media in case of mis-reporting also helps keep the narrative on track. On social media, food regulatory authorities maintaining a two-way communication would be of critical help in building consumer trust and enabling effective public health safety.

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