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INTERNATIONAL  
JOURNAL ON  
FOOD SYSTEM  
DYNAMICS

*Proceedings in  
System Dynamics and Innovation in Food Networks 2016*

## Food Scares: Reflections and Reactions

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### ABSTRACT

Fall 2014, a researcher from the Norwegian Institute of Public Health stated in a newspaper interview that she never touched chicken with her bare hands. This interview was the beginning of a media storm, which resulted in a 25% sales drop for chicken within three months. To be able to understand why this interview had such a strong effect, we conducted an explorative case study. Findings from previous studies of food safety behavior indicate that consumers are irrational and that information is not enough to change behavior. Gigerenzer (2015), however, argue in a recent article that the claim that people are hardly educable lacks evidence. He cites Simon (1985) quote that “*people are generally quite rational; that is, they usually have reasons for what they do*” and claims that teaching people to become risk savvy is a true alternative to nudging.

The aim of our study is to shed light on the rationality debate by exploring consumers’ reflections and reactions to the previously mentioned food scare article. Data from five focus-group interviews with Norwegian consumers of chicken were transcribed, content analyzed, and in-vitro coded, before we conducted a multiple correspondence analysis in PAST. We developed a graphical plot of our results, which we visually inspected and interpreted. The findings indicate that consumers do reflect when confronted with food scares. Some question the research behind the news, others wonder how dangerous this food scare is compared to other risks. Consumers are not irrational, even though their emotions co-occur more often with their behavior than their reflections.

### 1. Introduction

Communication with consumers is one of the most important elements in the effective management and control of food-borne hazards. This is particularly important under food crises outbreaks, where we aim to reduce the negative health consequences for consumers, but it is also important to communicate well with the market during a food scare. Food scares, defined here as scary stories about food with no scientific hazards

identified, forces many food companies and retailers to recall vast numbers of products. Better communication with the market can probably reduce the number of un Hazardous product recalls, limit food waste and reduce the economic burdens for both manufacturers and retailers. The difficult question is, however, HOW to communicate with the market. European Food Safety Agencies (EFSA) advisory group on risk communication states that risk communication needs to provide information to the public on hazards and risks, as well as inform about the process of conducting risk assessments and risk management decisions (EFSA, 2012). EFSA suggest that the risk (the likelihood that someone could be harmed by being exposed to “something” in their diet) should be communicated as *none/negligible, low, medium, high or unknown*. Others state that sharing information is not enough to change behavior (e.g. Brennan, McCarthy, & Ritson, 2007, Røssvoll et al, 2013).

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Libertarian paternalists (a term first coined by the behavior economist Thaler and Sundstein, 2003) argue that consumers’ reasoning is systematically flawed and hardly educable (Gigerenzer, 2015). Instead of educating people about food hazards and risks, they suggest to “nudge” people to change behavior. The libertarian paternalist program is called “paternalistic” because it tries to guide people and “libertarian” because no choices are taken away. A classic example of a nudge is the black fly in airport urinals to reduce spillage. Gigerenzer (2015) refers to the thoughtful analysis of Rebonato (2012) and define libertarian paternalism as a set of interventions aimed at overcoming people’s stable cognitive biases by exploiting them in such a way as to steer their decisions towards the choices they themselves would make if they were rational.

To be able to develop more effective risk communication strategies, we need to understand more of how people react to information. Do people lack rationality? Are people hardly educable? Are the philosopher J.D.Trout correct when he stated that biases are as stable, durable and universal as reflexes, and that the enlightenment vision is profoundly mistaken (Trout, 2005; Gigerenzer, 2015)? Or should we listen to Simon (1985), who claims that people are generally quite rational; that is; they usually have reasons for what they do. It might be that the observed “irrationality” actually is a result of social intelligence. The theory of *ecological rationality* that focus on the relation between the mind and the environment, claims that what the libertarian paternalists call irrationality actually is a result of pragmatic inference; people interpret the situation and intuitively understand what is not said (Gigerenzer and Selten, 2001). In this paper, we want to shed light in the rationality debate, by exploring how people reflect and react when exposed to information about a food scare.

## **2. Methodology**

### *2.1 The case*

WHO has defined antibiotic resistance as a global health problem and as one of the largest threats towards modern medicine. Internationally, we observe an increase in reported cases of patients infected with bacteria resistant towards antibiotics, and within EU/EES 25 000 deaths were estimated to be due to antibiotic resistance in 2007. People can be infected from other people, from animals, and from the environment

(including food). The main cases, however, are assumed to be: increased international trade of food and biological material, increased travel activities and movement of pets, increased international movement of labor, and increased use of antibiotics as human medicine internationally. There is always a risk of bacteria on raw food, but since the bacteria are mainly on the surface and will be inactivated with normal heat treatment, following normal food safety hygienic advice will protect well against infection.

The case investigated here is peoples' reflections and reactions towards a food scare about antibiotic resistant bacteria in chicken in Norway. ESBL (Extended Spectrum Betalaktamase) is a resistance mechanism that inactivates some of the most important antibiotics we use for treatment of human infections, especially those due to *E.coli*. In 2006 the first ESBL *E.coli* bacteria was observed in chicken in Norway, and in 2012 32.2% of the chicken fillets tested gave positive ESBL results. In 2012, the first kinolon resistant bacteria was also observed in chicken in Norway. Kinolon is today used as a reserve antibiotics for very serious and complicated infections; an antibiotics that is only used when other treatments or alternative antibiotics does not work. According to the Food Authorities in Norway 70% of all tested chicken fillets in Norway in 2014 contained kinolon resistant *E.coli* bacteria. However, we still don't know if the kinolon resistant bacteria in chicken has found a niche in the human population.

13<sup>th</sup> of September 2014, one of the first news articles in Norway about antibiotic resistance and chicken was presented in Nationen (a daily national newspaper with a specific focus on farming and agriculture). In this article a researcher from the Norwegian Institute of Public Health, suggests a health warning on all Norwegian Chicken. The article had the title: **Researcher suggest health warning on Norwegian chicken**, and had the ingress: *Antibiotic resistant bacteria is so common in Norwegian chicken that the authority should consider labelling the products*. The title and ingress were followed by her own personal rule: "I never touch chicken with my bare hands". This news article, that presented the spokesperson as an expert on antibiotic resistance and an experienced researcher within the field, started a media storm; a storm that correlated well with a strong decrease in the sales of chicken.

## 2.2 Participants and procedure

Five semi-structured focus group interviews, consisting of a total of 29 Norwegian respondents (62 % females), were conducted in the beginning of June 2015 in the Oslo area. In these focus groups, the participants were presented the article mentioned above. An experienced moderator handed out a copy of the article, read aloud the content and asked for the respondents' reflexions and reactions. The interviews were tape recorded and transcribed.

## 2.3 Data analysis

The reflections and reactions reported by the participants were categories according to an in-vitro developed classification system (see Table 1 for the classification system and the frequency of the observations). To reveal the closeness of the reported reflections and reactions, a correspondence analysis (CA) was applied in PAST v. 2.17c (Hammer et al., 2001). CA is a type of Principal Component Analysis (PCA) of categorical data. It is a method for identifying the dimensions explaining maximum variation in metric data, and can be understood as a “visual decomposition” of the  $\chi^2$ -statistic where the results are displayed in bi-plots (See Greenacre, 1984; Blasius and Greenacer, 2006 for more details).

### 3. Results

**Figure 1: Correspondence Analysis bi-plot of consumers reflections and reactions**

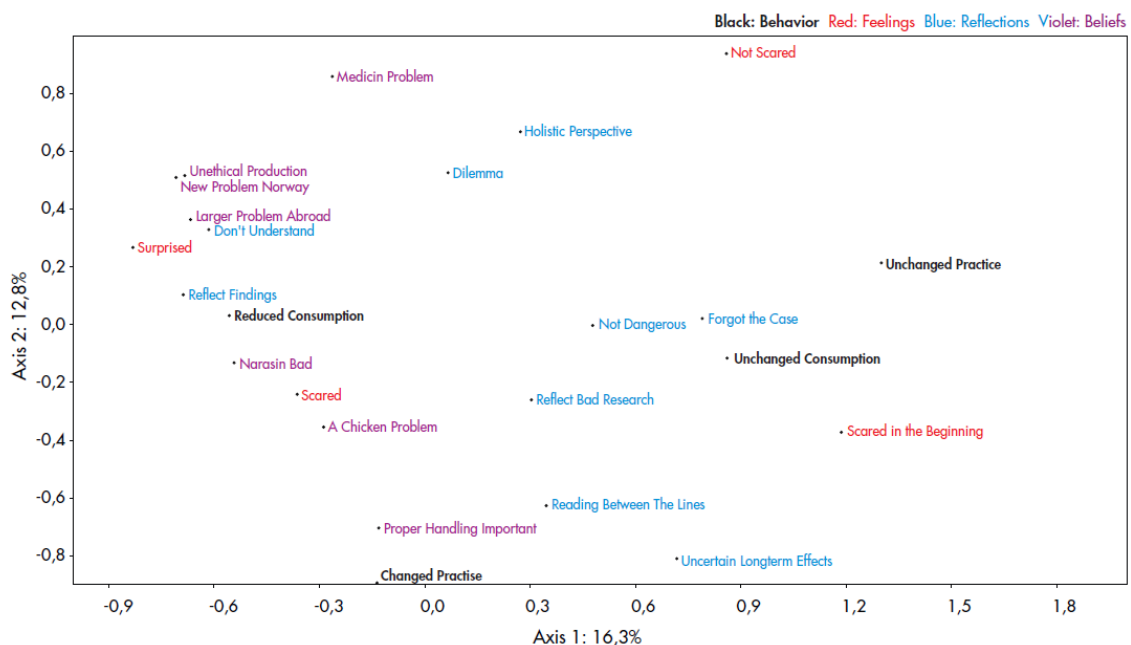


Figure 1 illustrates that the dimension that explains most of the variance in the data set (axis 1: 16.3 %) relates to behavior. Axis 1 goes from *reduced consumption* (left), via *changed practice* and *unchanged consumption*, to *unchanged practice* (right). We can also see that the changes in behaviors are closely linked to consumers' feelings. Respondents expressing *scared* and *surprised* feelings regarding the news about antibiotic resistant bacteria in chicken are those that state reduced consumption or changed handling practices. While those who are not scared (never been or only in the beginning) are the ones that continue as before with the same consumption and handling practices of chicken. Axis 2, which explains 12.8 % of the variance, goes from those who are uncertain about the long-term effect and therefore take their precautions (lower level of figure) to those with a more holistic perspective that perceive antibiotic resistance to be more related to increased use of antibiotics among humans (upper level of figure) than in animal feed. When it comes to peoples' belief, Figure 1 indicates that two groups of belief categories exist, those that believe this is a production problem; a problem

that they expected to be larger abroad and surprised to hear existed in Norway; and those that perceive this to be a problem for product made from chicken (called “a chicken problem” in Figure 1). While the first group is likely to change their consumption and buy less chicken, the second group is more likely to change their handling of the chicken (more proper cleaning of the kitchen equipment and thorough heating). As for peoples’ reflections, they do reflect, but their reflections does not co-occur with systematic behavioral reactions or specific feelings. The most common reflection (see Table 1) is to put the news into a more holistic perspective. Statements as *“Everything is dangerous, but we need to eat”*, *“Fat, sugar, chemicals, alcohol, and pesticides affects our health more than food safety and bacteria”*, *“Important with a holistic perspective. The alternative to buy is to have your own farm”*, *“We need to use common sense”*, *“Relax, this will pass by”*. Some consumers do also reflect about the research behind the news: *“I am questioning the findings, when the changes are that large. What’s the reason?”*, *“I am skeptical if it is only one researcher and no consensus. A lot of bad science exists”*. Others interpret the information (Categorized as “Reading between the lines”): *“Now that they are aware of the problem, they will sort it out”* or *“Why don't anyone react to this news? Maybe it is not that bad?”*

**Table 1: Classification system and frequency of observations**

Categories	Subcategories	Frequency
<b>Feelings</b>	Scared	39
	Scared in the beginning	18
	Not scared	37
	Surprised	12
<b>Beliefs</b>	A chicken problem	67
	Narasin in feed is bad	20
	Unethical production	25
	New problem in Norway	34
	Larger problem abroad	44
	Not dangerous for me	16
	Uncertain long term effects	15
	Important to clean and fry	57
<b>Reflections</b>	Dilemma	40
	Journalists quality differs	15
	Sceptical to findings	18
	Only one researcher/ bad research	19
	Holistic perspective important	60
	Medicin use is the problem	14
	Reading between the lines	15
	Don't understand	25
<b>Behavior</b>	Forgot the case	30
	Reduced consumption	41
	Unchanged consumption	69
	Changed praxis	55
	Unchanged praxis	15
<b>Total</b>		<b>805</b>

## 4. Discussion

The aim of this study was to shed light on the rationality debate by exploring consumers' reflections and reactions to a food scare article about chicken and antibiotic resistant bacteria. We observed that specific feelings seem to co-occur with specific consumer reactions. Scared consumers reduced their chicken consumption and/or changed their cooking practices, while those not scared continued as before. Our findings indicate that consumers do reflect when confronted with food scares: some question the research behind the news, others put the case into a more holistic perspective and wonder about the danger of this food scare compared to other risks. Critical reflections, however, seem not necessarily to lead to changes in consumption or food preparation practices. To contribute to the rationality debate, we want to discuss if the lack of co-occurrence between reactions and reflections observed in this study indicate irrationality or not.

What does it mean to be irrational? According to Thaler and Sundstein (2003), people suffer from systematic reasoning errors due to their cognitive limitations. *"People do not exhibit rational expectations, fail to make forecasts that are consistent with Bayes' rule, use heuristics that lead them to make systematic blunders, exhibit preference reversals (that is, they prefer A to B, and B to A) and make different choices depending on the wording of the problem"* (p.176). Kahneman (2011) states that *"the affect heuristics that guide citizens' beliefs and attitudes are inevitably biased, even if they generally point in the right direction"* (p.145). To be irrational means according to the libertarian paternalists to rely on heuristics and intuition rather than on statistics and logic. In the following discussion, we focus on two aspects of irrationality; the affect heuristic and the reliance on intuition instead of logic.

### 4.1 The affect heuristic

Within the risk literature (see the discussion of emotions and risk in Kahnemann, 2011, p. 137-140), affect is described as a heuristic that influence peoples' judgement and decisions. People consult their feelings when forming opinions and making choices. The easy question "How do I feel about it?" serves as an answer to the much harder question "How do I think about it?". In a demonstration of the affect heuristic, Alhakami and Slovic (1994) found that when people were favorably disposed towards a technology (water fluoridation, chemical plants, food preservatives, cars etc.), they rated it as offering large benefits and imposing little risk; while the opposite was the case when people disliked a technology (then disadvantages and high risk came to mind). The question is if relying on emotions when forming opinions are irrational behavior or not. In a conceptual paper published in Risk Analysis, Slovic (1999) claims that *"the public is not irrational. Their judgments about risk are influenced by emotion and affect in a way that is both simple and sophisticated"*. In this paper, Slovic discusses the complex and subjective nature of risk. While a danger is real, a risk is a subjective construction, a construction aiming at helping us in situations of high uncertainty. Since no objective risk exists, according to Slovic, we should not be surprised that many interesting and provocative things occur when people judge risks (and that in addition to emotional affect, factors as gender, race, political worldviews, affiliation, and trust strongly correlated with risk judgments). In a recent review of emotion and decision

making in the Annual Review of Psychology (Lerner, Li, Valdesolo, and Kassam, 2015), find that many psychological scientists now assume that emotions are the dominant driver of most meaningful decisions in life. Emotions guide everyday attempts at avoiding negative feelings (e.g. guilt and regret) and increasing positive feelings (e.g. pride and happiness), and they do so often without awareness. While a negative view of emotion's role in reason has dominated much of Western thought (for a discussion see Keltner & Lerner, 2010), we can now see a movement in support of Hume (1978), who argued that the dominant predisposition towards viewing emotions as secondary to reason is entirely backwards: "*Reason is, and ought only to be, the slave of the passions, and can never pretend to any other office than to serve and obey them* (p. 415)". In our explorative study of consumers reactions to a food scare story, we observe a clear link between expressed emotions (scared, not scared, which cover the emotion "fear") and consumers reactions (changing behavior or not). These observations are in line with previous studies showing fear to be an avoidance mechanism (Olsen, Røssvoll, Langsrud, Scholderer, 2014). Fear mobilizes us to cope with danger. A worry about what might happen can protect us, warn us and make us more vigilant. According to Grey's (1982) reinforcement sensitivity theory, perception of a food risk triggers the avoidance motivation system. Although a perceived risk is not always an objective danger, to avoid what you find scary in a world full of uncertainty, cannot be labelled irrational behavior.

#### 4.2 Intuition vs logic

Is it irrational not to do as you are told? We would like to argue, based on Gigerenzer (2015) insightful criticism of libertarian paternalism, that sometimes your intuitive thinking can be more helpful than logical thinking. When the situation is uncertain, and it is impossible to know the outcome, how can you then rely on your logic?

The framing effect that occurs when people's choices differ depending on how two "logically equivalent" statements are framed, is said to be inconsistent with rational behavior because it violates descriptive invariance (Tversky and Kahneman, 1986, p. 253). Gigerenzer (2015) disagree with the assertion that logical equivalence constitutes a general norm for rational behavior. Referring to the prototypical framing example of the half-full or half-empty glass, he argues that the respondent's un-logical answers are not irrational. In the experiment, a full glass of water (A) and an empty one (B), are put on the table. The experimenter asks the participant to pour half of the water into the other glass, and then to place the "half-empty glass" at the edge of the table. Most people choose glass A. According to Gigerenzer (2015) this is not irrational. It just means that the respondents uses the full glass as the reference point and intuitively understand that the glass from which they just poured out half the water, now is half-empty. To listen carefully to the speaker and interpret the question, to reduce the uncertainty as much as possible is not irrational behavior. Some will call it social intelligence. When analyzing the relationship between the mind and the environment a pragmatic inference is often more useful than a logical one (Gigerenzer and Selten, 2001). To apply other rules than the logical ones,

does not infer irrationality. *“In fact, the art of reading between the lines is more cognitive demanding than the narrow logic of descriptive invariance. After all, computers have no problems mastering logic but struggle with understanding natural language” (Gigerenzer, 2015: 369).*

In real world situations, when not everything is known, surprises happen and there is no way to determine the optimal behavior, intuitive intelligence might be as good, or even better, than logical thinking. In the food scare story about antibiotic resistance in chicken studied here, there are still a lot of un-knowns. We observe that the respondents reflect. They try to put the story into a larger, more holistic picture, they question the research behind the news, and they try to read between the lines. Even though we cannot see a clear link between their reflections and their behavior, we observe that their reflections are attempts to make sense of a complex and uncertain reality, a behavior that seems quite rational.

## 5. Conclusion

In this paper we have investigated peoples' reflections and reactions towards a food scare about antibiotic resistant bacteria in chicken in Norway and discussed if peoples' reactions and reflections seem irrational or not. We conclude that people seem to behave rationally. We observe the people's emotions guide their reactions. Those that report feeling scared change their behavior (consume less chicken or change their preparation practices), while those not emotionally affected continue as before. Nothing irrational about that. We also observe that people reflect about the food scare news about antibiotic resistant bacteria in chicken. They critically question the content of the news article and try to put the new information into a more holistic perspective. Nothing irrational about that either.

Since this was an explorative study with a very small number of observations, future studies should test out our findings on a larger sample size and for other kinds of news. We still don't know how to best communicate with the market when food scares hit the fan. Our findings indicate that people are rational and critically reflect about what they read. But they are also guided by their emotions, and might be differently affected by news triggering different emotions as disgust, fear and sadness. We therefore need more studies to dive deeper into this topic.

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