

Determinants of consumer response to a food scare: an experimental investigation

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Detailed Abstract (Or better: Detailed Summary)

European consumers' concern about food-safety issues has risen considerably in the past decades. The continuing BSE crisis, but also a number of less prominent food scares have contributed to this development. Examples are dioxin in pork, illegal use of growth promoters in calf fattening, or outbreaks of food-poisonings caused by pathogens, as e.g. salmonella bacteria. Such food scares have become a major cost factor for the food industry worldwide, as consumer response can be very drastic. Hence, political and business decision makers need to understand the determinants of consumer response to food-related hazards for designing communication strategies that deal adequately with consumer concerns.

In this paper factors from three distinct categories are investigated as determinants of consumer response to a food safety incident within an experimental setting. First, based on the findings of many studies in risk research, gender and a food-poisoning experience represent the category of socio-economic and biographic variables.

Second, risk-attitude, risk-perception and perceived-control constructs represent individual risk-related characteristics. The measures of these three variables are derived from factor analysis that was performed on the respondents' ratings of 18 psychometric variables in the course of the experiment.

Third, supplier differentiation with respect to reliability is introduced as a determinant representing supply side characteristics, a category that has so far received little attention in the analysis of consumer response to risk. In a recent article, Böcker and Hanf (2000) have proposed an expected-utility model in which consumers differentiate between supplier types on the basis of reliability and update their beliefs about a particular supplier's trustworthiness according to Bayes' rule. The model predicts that the loss of trust due to a food scare strictly increases with the perceived discrepancy between supplier types.

The data were gathered in an experimental study at the University of Giessen, Germany, in December 2000. The study was conducted in paper-and-pencil format in five sessions with 20 subjects each. An experimental session lasted 1 hour and 35 minutes and was divided in five phases:

- I: General introduction.
- II: Data on socio-demographic, biographic, consumption-related and ratings of risk-related psychometric variables for assessment of four food-related hazards, BSE (mad cow disease), genetically modified food, salmonella bacteria and listeria bacteria, is gathered.
- III: Product and market trials, combined with the distribution of detailed information on lis-

teria bacteria, an ubiquitous pathogen that has caused a number outbreaks of food-poisonings from meat and dairy products in the past decade.

- IV: Key experiment: A hypothetical, but realistic food-safety incident involving listeria in specialty cheese is reported to the subjects in the format of newspaper articles and subjects' responses are recorded (see below).
- V: Subjects rate the 18 risk-related psychometric variables for a revised assessment of listeria again.

Phases I through III served to prepare the subjects for phase IV, in which the key experiment was set. In particular, phase III was intended for creating the necessary interest and the feeling that the risk factor is a realistic one. In Phase IV, for invoking the perception of *two distinct supplier types* that differ in reliability, information about a hypothetical trade association of specialty cheese importers was given to the subjects in a newspaper-article format. The majority of this association's member firms were certified for "outstanding quality." Further information in newspaper format differentiated between certified member firms (Type A, reliable) and non-member firms (Type B, less reliable). The *degree of supplier differentiation* was conveyed to the subjects as the share of listeria-contaminated samples in a quality control study. Variation of the quality-control results produced three experimental treatments, plus one control group in which no differentiation between suppliers was reported. In all treatments Type A suppliers performed better than Type B suppliers.

Then, subjects received two pieces of information about a particular retailer that were also presented in the format of a newspaper article. The first described the retailer as a member of the trade association. The second described a food-safety incident in which the retailer had been involved and which had caused two minor listeria food poisonings. Subjects' beliefs about the trustworthiness of the retailer was indirectly elicited on a three-item scale both before and after subjects had received this last piece of information. Subject's mean scores of the three-item scale thus provide two distinct measures of individual response to risk, i.e. his expressed beliefs about the trustworthiness of the retailer, which can also serve as a proxy measure for the individual's purchase probability: *A priori*, only the individual's general awareness of the possible presence of listeria in specialty cheese should have an impact on his judgement of the retailer. *A posteriori*, direct concerns for oneself should play a greater role in the evaluation of the retailer, after he was proven to have caused harm to other consumers. The two measures are then regressed on the three categories of determinants, applying multiple OLS regression. The results can be summarized as follows:

- a) *A priori* beliefs about the retailer's trustworthiness are affected neither by gender nor by food-poisoning experience. While differences between the three treatments and the control group remain insignificant, the impact of increasing levels of differentiation between suppliers on trustworthiness is positive and highly significant ($\alpha=0.01$). The risk-attitude and risk-perception constructs are not significant at any conventional levels ($\alpha<0.15$). Opposite to that, the impact of the perceived-control construct is significant at $\alpha=0.05$ and in the expected direction: The more subjects perceive themselves in control over the hazard, the more positive they judge the retailer's trustworthiness.
- b) *A posteriori* beliefs are not affected by food-poisoning experience either, but to a moderately significant extent by gender ($\alpha=0.10$): Women report lower levels of trustworthiness than men do, as is in line with previous research results. The theoretical predictions concerning the impact of food-safety related supplier differentiation are not supported by the data. First, there is no significant difference between the control group on the one hand and the three treatments on the other. Second, the impact of an increasing degree of differ-

entiation is significant at $\alpha=0.05$, but its direction is opposite to the one predicted by theory. The most striking result, however, is that now risk attitude largely determines subjects' response to risk. This predictor is highly significant ($\alpha=0.0001$) and has the expected direction, while the risk-perception and the perceived-control constructs are clearly insignificant.

The concluding discussion focuses on two of the above findings in particular. On the one hand, the experiment has clearly failed to support the theoretical model predictions concerning the impact of supplier differentiation. Possible shortcomings both in the theoretical model and in the experimental design are discussed. On the other hand it is noteworthy that *prior* and *posterior* beliefs about the trustworthiness of the retailer are determined by different psychometric constructs. It is argued that future (experimental) research should investigate whether risk attitude only “comes into action” in the wake of food scares, while it plays no role in “calm” times.

Reference

Böcker, A., C.-H. Hanf (2000): Confidence lost and –partially- regained: Consumers' response to food scares. *Journal of Economic Behavior and Organization*, 43, 471-485.