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Risk Communication Strategies for Genetically Engineered Food Products

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Ladies and Gentlemen, I'm glad to present the results of the first empiricial study in the CADE-GENTECH[1] project to you. My name is Joachim Scholderer, from the University of Potsdam in Germany, one of MAPP's cooperating institutions in this cross-national project (cf. Bredahl, Grunert and Frewer, 1998). Before presenting the actual results, I'd like to give you some impressions of the previous research done in this field.

Introduction

First, we will look at some examples so that we all know what we are talking about. Then, I will shortly review a study by Smink and Hamstra (1994) from the SWOKA institute of Consumer Research in the Netherlands, a study that provides us with a fruitful classification of the consumer-relevant risks and benefits of modern biotechnology in food production. Next, we will have a look at the relevant actors in the public debate on genetic engineering. Since this is a study of the European expert audience, it is important to know who says what for which reasons. Who says what for which reasons is also the question that will guide our account of risk communication, bearing in mind that information is not necessarily informative, and that communication has always its purposes. All this will enter into what would be called a model in quantitative research, sketching possible paths and relations between the various concepts involved.

Some Introductory Examples

The public debate on the use of recombinant DNA techniques in agriculture and food processing has extensively covered the associated risks and benefits. Recall, for example, some of the potential risks to which the critics have passionately alerted the general public (surely, the list is incomplete): (a) Possible health risks such as allergies, antibiotic resistance, or lowered nutritional content, (b) potential ecological upset due to unintended gene transfer into wild populations, (c) possible loss of plant diversity, or (d) devastation of

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already fragile third world economies by take-over of markets for natural, unaltered agricultural products, for example, vanilla production from genetically engineered microorganisms rather than vanilla beans.

On the other hand, the proponents do not grow tired of stressing the potential benefits of genetic engineering: (a) enhanced processing safety, for example in cheese production, (b) disease and pest resistance, enabling reduced expenditure of fertilizers and pesticides, resulting in a cleaner environment, (c) new plant and animal varieties which could improve flavor, texture, storage and transportation capacity, or nutritional content, (d) lower prices for consumers, or (e) lower risk of starvation periods in third-world countries due to transgenic plants which are resistant to environmental stress factors.

Consumer-relevant Utility Dimensions

By means of literature review as well as expert interviews, Smink and Hamstra (1994) have made a heroic attempt to compile the consumer-relevant risks, benefits, and debatable effects of modern biotechnology on food production completely. The first three aspects of their classification closely resemble the classical fields of risk communication: safety, health, and environment.

Moral values provide an account of consumers' fundamental acceptance or rejection of genetic engineering, whereas price and quality are the more product-related utility dimensions from marketing science. Social usefulness and distribution of benefits are criteria for judging the aggregate utility of genetic engineering, in terms of overall benefit for an economy, and in terms of dispersion over actors. Information is, of course, the input into any risk communication program, whereas freedom of choice and decision power over foodstuffs specify the extent to which an actor participates and the role he plays in social choice over genetic engineering in food production.

Communication Flow between the Relevant Actors

Besides reviewing the risks and benefits themselves, Smink and Hamstra (1994) tried to model the communication networks underlying the public dispute over genetic engineering. Their model distinguishes eight social actors: government, research, farmers, food processing industry, distribution, consumers, consumer organizations, and environmental organizations.

The figure you see illustrates the various lines of influence between the relevant actors. Obviously, the model does not include direct information flow from research, farmers, or government to the consumers. Neither does it include direct information flow

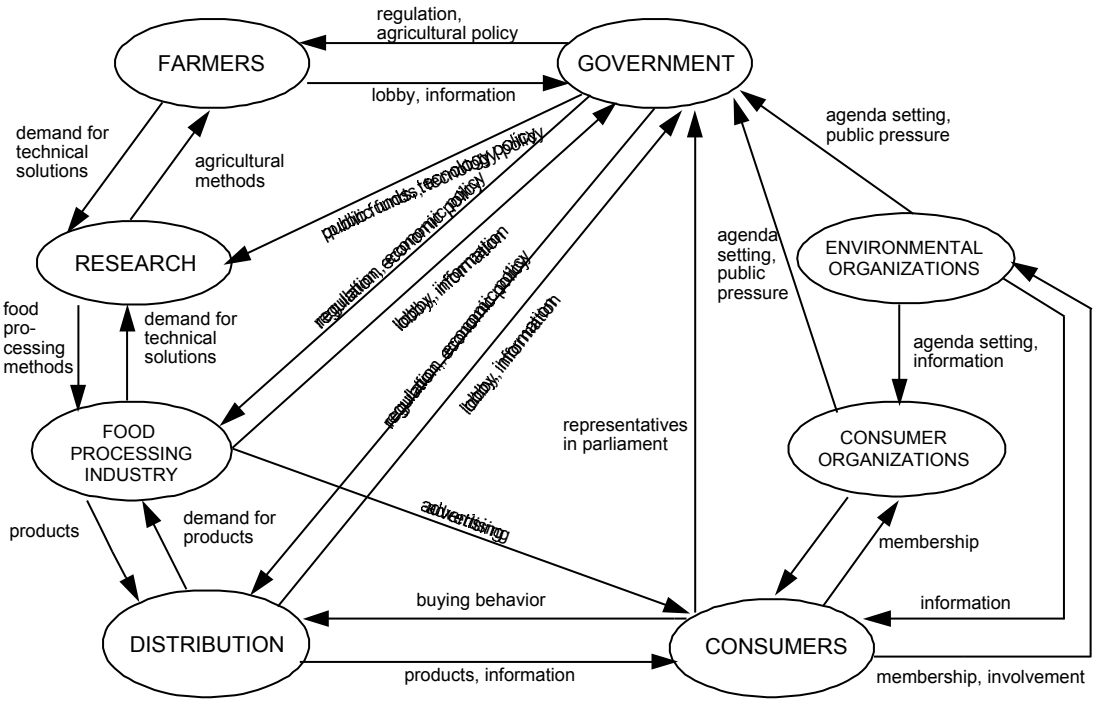


Figure 1. Lines of influence between the relevant actors (taken from Smink and Hamstra, 1994, p. 43).

from research, farmers, or government to the environmental and consumer organizations: the respective communication processes are mediated. Mediated communication, however, involves editing and restructuring of information, that is, content, amount, type, and target of the messages may change entirely depending on the respective actors involved. Lets's make an attempt to clarify the relevant criteria for assessing such processes.

Risk Communication Dimensions

Rohrmann (1992) presents a detailed list of criteria for the evaluation of risk communication programs. The first group refers to the actual content of the message: (a) substantive correctness of the information transmitted, that is: is it after all true what the respective actor says about a given risk?, (b) completeness of information, that is: has everything been said that is important?, (c) relevance and utility of information, that is: can the target audience make any use of the information?, (d) comprehensibility of the message, that is: can the message be understood without an advanced amount of expert knowledge?, and (e) credibility of the information source: will the target audience expect the least degree of honesty from the actor?

The second group of criteria deals with the effectiveness of the communication process: (f) constructive interaction between the involved parties, (g) reaching the relevant target groups, and (h) feedback possibilities/dialogue with the consumer. The third group of criteria refers to the consumer variables the communication program aims at, that is: which dimensions are to be influenced? We will look at four possible domains: (i) increased knowledge, (j) problem awareness and involvement, (k) positive evaluation/attitude change, and (l) trust in the information source. The former two are cognitive domains, whereas the latter two are affective domains. The central question here is: Do you want to change what the target audience think or what they feel?

Complete Model

All this may be integrated into some kind of communication model. The utility dimensions from Smink & Hamstra (1994) enter as the input of the model, providing the information database to the communication program. This "raw input" undergoes a process of message design, in which the content aspects correctness, completeness, and comprehensibility are edited and adapted to the credibility of the respective actor. Input and message design interact with the process aspects, specifying how effectively the message is implemented, and all of these independent variables aim, of course, at certain targets, that is, at the respective consumer variables that are to be affected (knowledge, awareness, attitude, or trust).

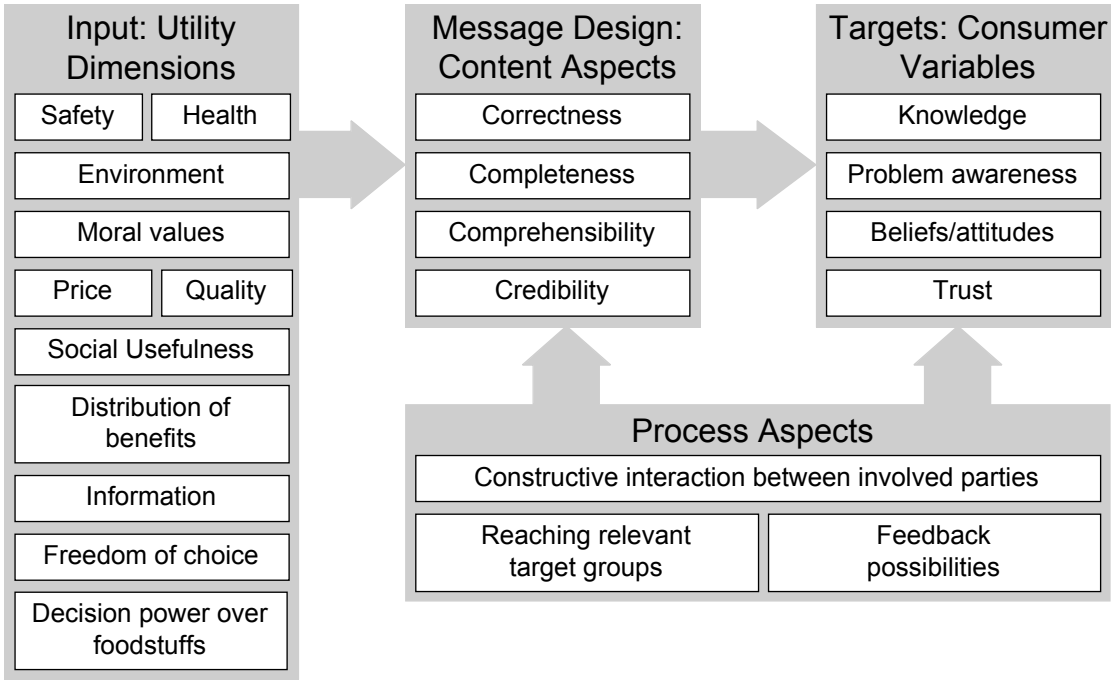


Figure 2. The complete risk communication model.

Aims of the Study

This brings us to the objectives of our study. First, we intended to provide some kind of update of the Smink & Hamstra (1994) study. However, our study should be more focused on those risks and benefits of genetically engineerd food products that will dominate the public debate in the following years. Moreover, existing research had its flaws in that it had no explicit account of communication strategies. That is, the third objective was to link the risks and benefits with possible strategies how to communicate them to the public.

Method

Now, the technical details: the participating experts, the schedule of the focus group discussions, and the content analysis procedure. In autumn 1997, the four participating research institutions in Denmark, Germany, Italy, and the United Kingdom recruited outstanding experts for participating in focus group discussions.

Participants

The final composition of the four focus groups is shown in Table 1. Reflecting the different actors involved, we tried to make sure that at least one representative from each of the following groups would take part: Scientific research, authorities responsible for the approval of genetically modified organisms, suppliers of genetically modified organisms, food processing industry, associations of industry, agricultural organizations, retail, media, professional communication agencies, consumer organizations, and environmental organizations. Altogether, 48 experts participated in the study.

Table 1. Composition of the expert focus groups.

	DK	*D*	*I*	*UK*	
Scientific research institute	2	3	4	2	*11*
Approving authority	1	1		1	*3*
Supplier of GMO	1	2	4	2	*9*
Food processing industry	1	1			*2*
Association of industry	1	2		1	*4*
Agricultural organization	1			1	*2*
Retail	1	1	1		*3*
Media		1	2	1	*4*
Communication agency		1	1		*2*
Consumer organization	1	1	1	1	*4*
Environmental organization	1	1	1	1	*4*
	10	*14*	*14*	*10*	*48*

Procedure

All focus groups followed the same dicussion schedule. The first major topic, "Genetically engineered food products in 2010", served as some kind of warm-up. The second major topic, "Risks, benefits, and market acceptance" elicited the outstanding risks and benefits of genetically engineered food products, and identified those risks and benefits the public debate was expected to focus on in the future. The third major topic, "Communcation strategies", dealt with possible risk communication programs, that is, how to inform the consumers about genetically engineered food products.

Content Analysis

A content analysis procedure similar to Knodel (1993) was chosen. In a first step, the videotaped discussions were transcribed, translated, and divided into meaningful segments. Altogether, the resulting material consisted of 787 relevant segments, of which 18 percent came from the Danish, 36 percent from the German, 13 percent from the Italian, and 33 percent from the English focus group data. In a second step, the data segments were classified according to a category system that we had derived from Smink & Hamstra's consumer-relevant utility dimensions and Rohrmann's risk communication dimensions. In a third step, the data in each category were paraphrased and grouped according to equivalent content. It must be noted, however, that such a procedure requires a certain amount of judgment and, consequently, also a certain degree of subjectivity. But remember that this is a qualitative study, a study where it is important to find the right questions and not the exact answers.

Results

And now, the results. Due to the time constraints, I cannot present all of our data to you. Instead, I chose four sample categories from the risks-and-benefits-part of the model, and compiled the risk communication part into six prototypical communication strategies.

Sample Category 1: Food safety

The perhaps most astonishing result of the study was the experts' general unwillingness to resume the public debate on safety risks. Although some general reservations were reiterated, for example potential misuse and unpredictability of evolutionary consequences, no specific positive or negative claims according to food safety were presented. However, the end of the risk discussion was interpreted in different ways: (a) that the safety requirements and administrative procedures are simply perceived as appropriate,

(b) that the critics have not been able to present evidence for their risk theories, and (c) that global assessments of the risks and benefits of a production technique as a whole are pointless, because only the actual behavior of a specific organism can be judged meaningfully. One more general aspect seemed of special importance: Assuring that products do not contain genetically modified components is often impossible for producers and retailers, especially when raw materials or products are imported from outside the European Union.

Sample Category 2: Product Quality

According to the expert community studied, the development of genetically engineered food products seems to follow some sort of 'generation pattern'. Most products that have already entered the European market are perceived as a first generation whose quality attributes pertain to improved cultivation, processing, and distribution characteristics. Significant changes in functional characteristics will require more time, and many experts expected them not before 2010. Changes in functional characteristics that are currently under development include (a) allergy-friendly breastmilk substitutes, (b) soybeans with modified oil composition, (c) potatoes with modified starch composition, and (d) products containing less saturated fatty acids, resulting in improved nutritional value and thus providing healthiness as a quality attribute. However, it was stressed that the effects of improved quality on product sales are most likely subject to price constraints. That is, the demand for genetically engineered food products will only increase when their quality is superior while their price remains constant or is lower than that of conventional products.

Sample Category 3: Freedom of Choice

Freedom of choice is a fundamental property of non-monopolistic economies, as well as a fundamental right in open societies. In this sense, the true meaning of labeling of genetically engineered food products is, of course, to enable informed consumer choice. While several proponents argued that genetically engineered food products provide more variety in food markets and thus by definition improve consumer choice, others were not so unconditionally optimistic. It was doubted if a choice between genetically modified products and unmodified products would even be possible. Soybeans, for example, are not distributed separately on the world market, and no producer or retailer can guarantee that his input material has definitely been free of genetically modified varieties. Consequently, virtually any traded product may contain traces of genetically modified components. Furthermore, informed choice requires a certain amount of knowledge. Knowledge,

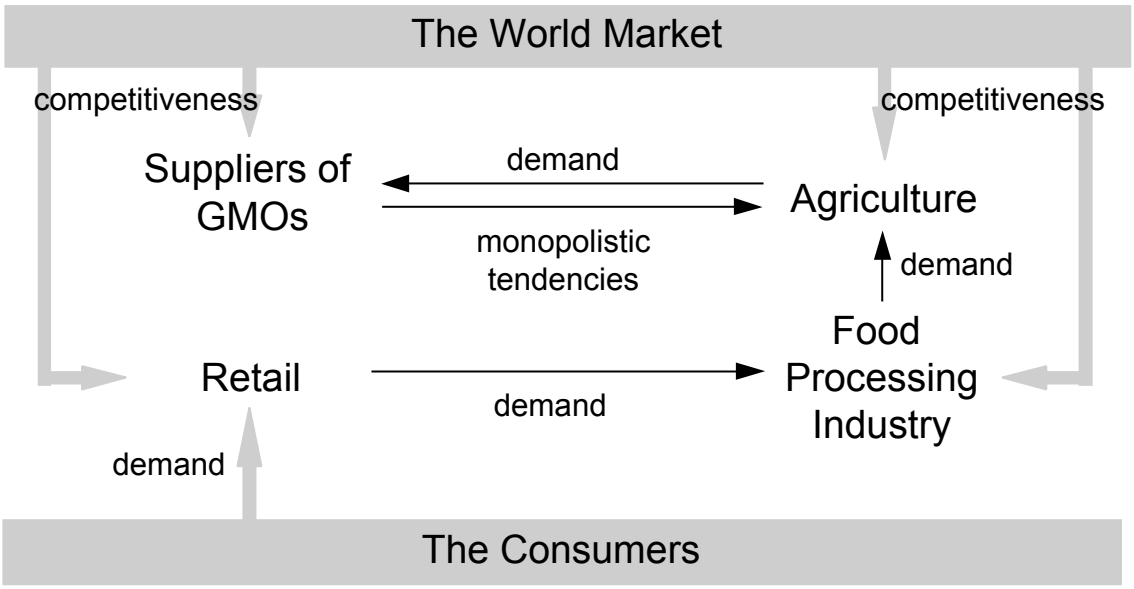


Figure 3. Perceived control structures in the food sector.

however, may be formed upon information that is unbalanced or even deliberately biased, resulting in faulty judgments and, finally, in faulty decisions.

Sample Category 4: Decision Power over Foodstuffs

Well, that was fun. No-one had the power, no-one was responsible, no-one was in charge! The question here is: Who controls the food sector? And, as we had expected, the attributions varied wildly. The food processing industry, for example, felt no possibility to control the raw materials they used, especially when the materials were imported. The retailers maintained that exactly the food processing industry had the power, since their demand for raw materials controls primary production. The retailers, in turn, were blamed to control the food industry, and the food industry was blamed to supply the retailers. The consumers were also referred to as the primary demand side factor, ruling the food market by means of purchase and boycot, while others perceived them as largely powerless. Furthermore, monopolistic tendencies and the overwhelming influence of the US market were blamed. The pattern is clear: In the successive market system of the food chain, each actor tends to blame the predecessing market.

Well now, the results from the risks-and-benefit categories of our content analysis have been straightforward to report. With the risks communication categories, this is not the case, and it is not the case for two reasons: (a) this was much more data, and (b) disentangling the strategies makes them too abstract for a short presentation. So, I have "re-compiled" the in-depth analysis into a set of prototypical risk communication strategies.

Strategy 1: Scientific Information Approach

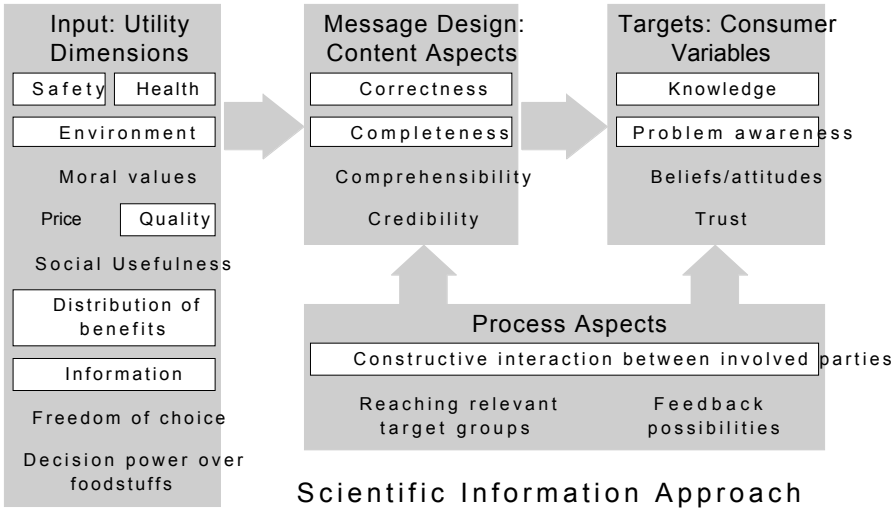
Type one may be called f “full scientific information approach”. The input draws heavily on scientific evidence, that is: safety, health, environment, and product qualities are the most relevant utility dimensions, where all the possible risks and benefits can be subjected to empirical tests. Consequently, the evaluative dimensions are of minor importance. The proponents of this approach felt obliged to provide the consumer with the same amount of infomation that is available to experts, including not only basic knowledge on genetic engineering, but also the necessary skills for interpreting scientific data: the rationale of risk assessment, balanced discussions of risks and benefits, comparisons with other methods in food production, and the administrative procedures preceding the actual marketing of genetically modified organisms. The messages are designed to be scientifically correct and complete, and aim at knowledge and problem awareness, that is, the actual trade-off is left to the consumer. The typical communication channel is the textbook.

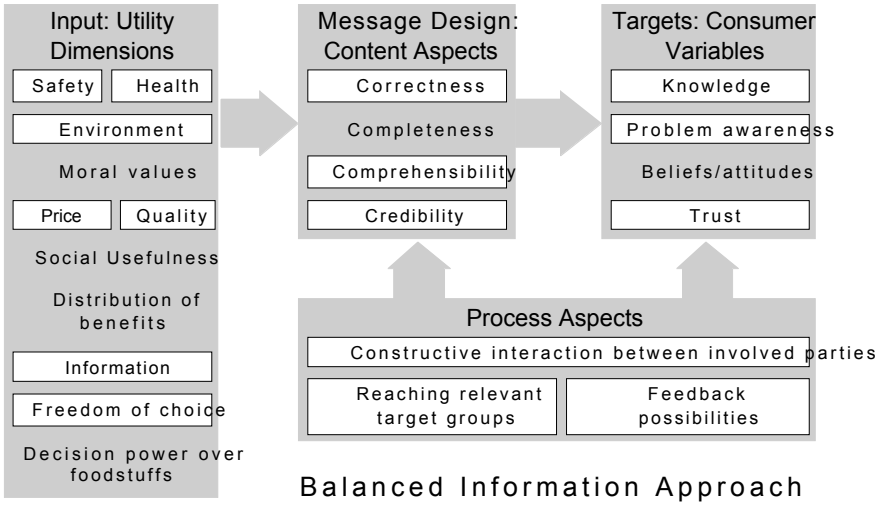
Strategy 2: Balanced Information Approach

The second prototypical strategy may be called “balanced information approach”. This is a typical strategy of retailers. Similar to the scientific approach, the focus is on hard facts that aim at enhanced knowledge and problem awareness. However, it does not present full-scale evidence but selects the important items and balances risks with benefits, trying not to expect too much of the consumer. Moreover, it assures that the messages are comprehensible and do not suffer from dispute in the expert community. Clearly, the success of this strategy depends on a certain amount of credibility, but at the same time also tries to improve on it. The typical channel is a short, clear-cut brochure on genetically engineered food products in general, distributed in supermarkets and accomplished with feedback possibilities like telephone hotlines.

Strategy 3: Product Information Approach

The third strategy may be called “product information approach”, especially favoured by consumer organizations and also some retailers. It is pretty similar to the balanced information approach, only that it focuses entirely on the single product, and not on the production technology in general. Consequently, it is not interested in consumer awareness or trust that might go beyond the actual product. The typical channels are a label on the package or a leaflet distributed in the supermarket, accomplished by telephone hotlines or in-house counseling personnel.





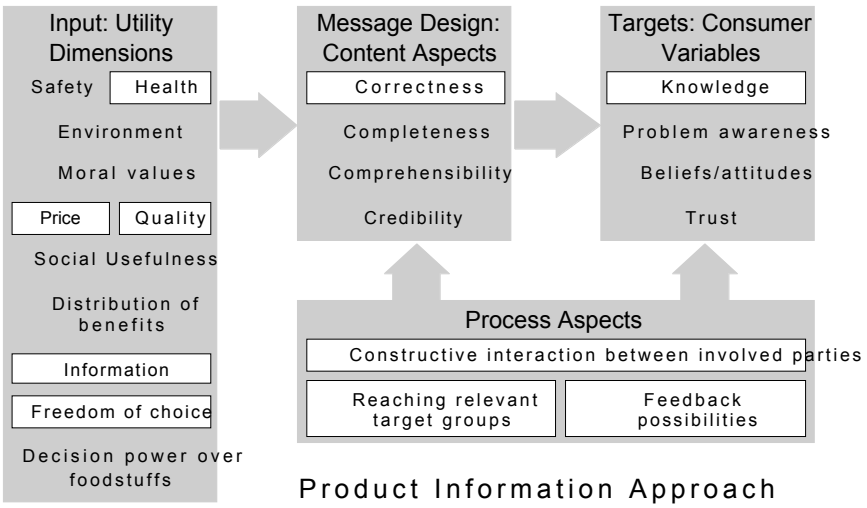


Figure 4. Graphical representation of the three knowledge-oriented strategies.

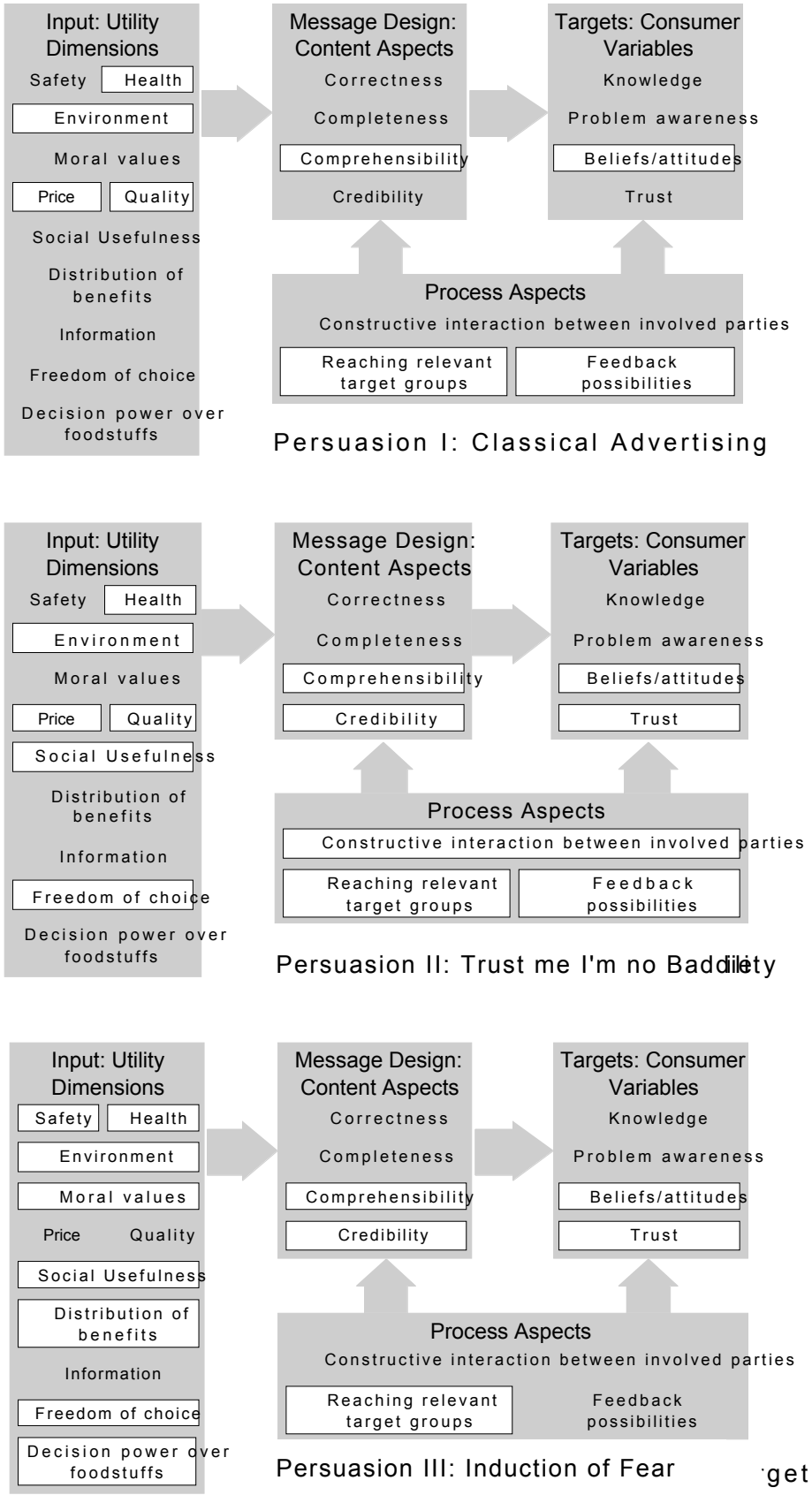


Figure 5. Graphical representation of the three persuasion strategies.

Strategy 4: Classical Advertising

The three strategies presented so far had in common that they aimed primarily at cognitive dimensions, that is, knowledge and problem awareness. However, there are other ways to market a product. This one is a strategy that was sketched by the representative of a major supplier of genetically engineered soybeans, and it can be best described as classical advertising or put in a nutshell by the slogan “genetic engineering is cute!”. This approach doea not bother with truthfulness or completeness. It communicates benefits, discounts risks, tries to reach the target groups via maximum comprehensibility. Typical channels are tv spots and ads in the print media. The strategy aims directly at attitude change, realising that it is not compulsory to take the long way over knowledge or trust.

Strategy 5: Trust me I'm no Baddie

Here, another industry campaign is depicted, accomplishing the “classical advertising approach” by an industrious attempt to make the supplier more credible. In a nutshell, this strategy communicates a big “we have understood”. The strategy is especially important in the UK.

Strategy 6: Induction of Fear

Finally, a negative persuasion strategy. This is a portrait of the approach some environmentalists have taken. Or at least was attributed to them by other participants. This approach draws heavily on evaluations of the moral kind, that is: The information is not intended to be further weighed by the consumer. Especially striking is how the credibility problem is approached here: credibility is achieved and maintained by sticking to the same policy, that is, continuously reiterating the same arguments regardless of new evidence. As one of the environmentalists from our expert panel conceded, the strategy was explicitly tailored to a perceived need for assurance in a selected target audience. The typical communication channel is the internal newsletter, accomplished by well-directed happenings for the media.

Discussion

Okay, that’s it. I have tried to sketch what the European expert community thinks about (a) relevant risks and benefits of genetically engineered food products, and (b) how they intend to communicate them. If we are to derive an overall conclusion from the results, the answer to the first point is that (at least in the northern countries of the EU) the risk

discussion is over and is tried to be replaced by a discussion of benefits. The second question was how this is to be carried out, and the answer seems to to be the diversification of communication strategies. Which one of the prorotypical strategies will prove effective in which consumer segments is, however, an open question. But we hope to find at least some hints in the subsequent studies to be carried out in the CADE-GENTECH project. Thank you.

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