

Seven Years of Nutri-Score – An Evaluation by German Experts

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ABSTRACT

The Nutri-Score looks back on seven years of use in France and four years of use in Germany. Since it has been developed by a group of French scientists, retrospective evaluations for its use in the French market are more prominent than for the German market. Research on the Nutri-Score, in general, is rather sparse for the German market. Implementing a qualitative interview study with 23 experts and consumers, this study elicits the relevance, advantages, drawbacks, and potentials of the Nutri-Score regarding the German market. Results indicate that the Nutri-Score offers consumers an easy-to-understand orientation but faces significant criticism about its informative value. This criticism is not new and in the last few years, found recognition by national and supranational institutions. Thus, the most pronounced problem can be found in a missing education of the society; not only regarding the Nutri-Score, but healthy and sustainable nutrition in general.

1. Introduction

The Nutri-Score as a front-of-package seal was conceived in France and has been used there since 2017 (Julia & Hercberg, 2017a, 2017b); Belgium, Spain, Luxembourg, Switzerland, the Netherlands, and Germany followed suit. It was introduced in Germany on 6 November 2020 and is part of the German national reduction and innovation strategy for sugar, fats, and salt in finished products. The introduction is supported by the WHO, as labelling can support governments in implementing health strategies without having to make serious cuts to consumer rights (WHO, 2021).

German food manufacturers can currently introduce the Nutri-Score on a voluntary basis, but must then use it for their entire product range (BMEL, 2021). The EU Commission wants to achieve two important goals with the Nutri-Score. Firstly, consumers should be better informed about how healthy a product is, and secondly, manufacturers should be indirectly encouraged to improve the quality of their food.

While numerous studies with thousands or even millions of participants examine the functionality of the Nutri-Score in practice and its signalling effect compared to other nutritional labels among consumers, the opinion of nutrition experts is rarely considered in great detail in the studies (Perret & Skretkowicz, 2024). The latter is particularly true for

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Germany, where there is currently only one qualitative study on the perception of the Nutri-Score.

The aim of this study is therefore to work out in detail how relevant, useful, functional and credible the Nutri-Score is in Germany from the perspective of nutrition experts, economists, packaging experts and ordinary consumers. In particular, the aim is to obtain detailed and well-founded suggestions for improvement from experts in in-depth interviews.

As a caveat, it needs to be stated that the study implements a consistent interview guide developed initially before the scope of the changes to the Nutri-Score in early 2024 became public and before reactions like Danone's abandonment of the Nutri-Score label could be foreseen. In the conduction of the study, it has been opted to rather implement a consistent research instrument across all the conducted interviews, than adjust the interview guide half-way across the interviews and pick up on more recent developments. The consequences of current developments will, however, be discussed in sufficient detail in relation to the interview results in the final sections of this article.

To achieve the objective of the article, the following second section first establishes a general understanding of the Nutri-Score per se and its treatment in the literature, in particular regarding qualitative studies covering it. Building on this background, the research objective and research design are motivated. The third section presents the findings of the interview study and the fourth discusses them. Finally, in the fifth section, based on the findings and the current situation, practical recommendations are deduced and limitations to this study are presented.

2. Materials and Methods

2.1. On the Nutri-Score

Germany uses the Nutri-Score, as shown in Figure 2, which is an additional supporting measure for nutrition labelling (BMEL, 2020a). It comprises a five-level colour scale with letters A to E, which is applied to the front of the product. The scale indicates the nutritional value of the respective product: Energy content and nutritionally favourable nutrients are offset against each other. This makes it possible to compare products within a product group in terms of their nutritional values (BMEL, 2020b). The nutritional-physiological composition of a product is graded from the most favourable, marked A in dark green, to the least favourable E in red.

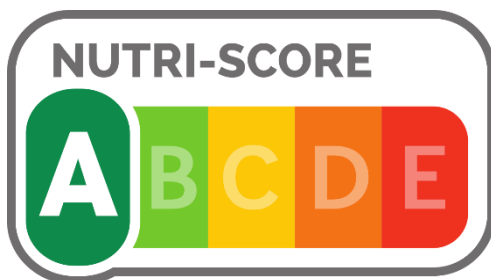


Figure 1. Nutri-Score
Source: (BMEL, 2021)

The Nutri-Score value provides information within a product group about which product is the best choice in terms of nutrient composition but cannot provide any information about what an ideal diet should look like. It gives shoppers a quick guide to the nutritional value based on a fixed rating system and a quick guide to the health value within the product group (BMEL, 2020a). By combining colour and text elements, the Nutri-Score has an inclusive effect on people with visual impairments (dyschromatopsia) or reading difficulties (dyslexia). Due to its

size, it is also clearly recognisable for older people compared to more detailed nutritional information.

2.2. Theoretical Background

Studies suggest that nutritional labelling such as the Nutri-Score on the front of food packaging improves understanding of nutrient composition and raises awareness of healthier food choices. The Nutri-Score makes it easier to recognise the nutritional value of products and thus supports healthier purchasing decisions (Egnell et al., 2019; Egnell et al., 2021; Marcos et al., 2023).

If we have a closer look at the Nutri-Score, it becomes clear that it is particularly effective, simple, and easy to understand compared to other labelling. Research conducted in France shows that the Nutri-Score helps consumers make healthier choices (Crosetto et al., 2020; Dubois et al., 2020; Ducrot et al., 2022; Fialon, Serafini, et al., 2022; Julia & Hercberg, 2017b).

While many quantitative studies analyse the impact of the Nutri-Score on consumer purchasing behaviour, there are also qualitative studies that provide a more profound insight into the perception and use of the Nutri-Score. For example, a German study (Zander, 2022) shows that consumers perceive the Nutri-Score as useful for purchasing decisions and that it can support a healthy diet. However, it is also pointed out that the labelling is not always clear. The study focussed on younger to middle-aged women and showed that socio-demographic characteristics play a role.

Another study (Fialon, Nabec, & Julia, 2022) compares the views of Italian and French stakeholders on the introduction of the Nutri-Score. Italian stakeholders are critical of the Nutri-Score because it does not fit with Italy's traditional products and these cannot be reformulated. The Nutri-Score is therefore not only an instrument for promoting healthy eating but also touches on cultural and political aspects.

A study in the Netherlands (Vyth et al., 2009) combined quantitative and qualitative approaches and found that consumer confidence in the logo would increase if consumers were aware that it is scientifically based and supported by the state. This indicates that there is still a need for education to promote acceptance of the Nutri-Score.

To summarise, it can be said that the Nutri-Score can be a helpful tool to encourage consumers to make healthier purchasing decisions. At the same time, there is still a need for open discussion about its exact design, communication and cultural differences in perception.

3. Research Design

The discussion in the previous section hinted that only some scientific studies on the Nutri-Score are available for the German market overall. Additionally, hardly any studies across Europe consider the assessments of nutrition and health experts at different levels and compare these with the assessment by consumers.

This study contrasts this with a qualitative study that compares the opinions of 23 experts, guided by seven research questions. In addition to twelve experts from the broad field of nutritional science (ecotrophologists, nutritionists, etc.), the opinions of four people from the food industry, including packaging designers, and four consumers from the four current generations (Z, Y, X, baby boomers) are considered.

All respondents are confronted with the same seven questions in individual interviews and asked to answer them as openly and in as much detail as possible. To provide the experts with the necessary framework for detailed answers, the duration of the interviews was between half an hour and an hour.

Questions Q1 to Q7 were presented to the respondents in this order. While further questions were explicitly allowed for better understanding, there were no additional questions or any other influence from the interview leader. At the end of the official part of the interview, the participants were provided the opportunity to raise any further open or particularly relevant points.

- Q1: What factors influence the purchase of packaged food in Germany?
- Q2: What packaging design factors play a role in the decision to buy pre-packaged goods?
- Q3: What significance does the Nutri-Score have for German consumers when buying packaged food?
- Q4: How credible is the Nutri-Score as a quality label for Germany?
- Q5: Is the Nutri-Score an efficient tool for comparing products within a product group?
- Q6: What significance does the Nutri-Score have as a quality label in the area of corporate greenwashing in Germany?
- Q7: How can the Nutri-Score be improved in its function as a seal of quality for German consumers?

4. Results

Implementing the interview guide in the previous section, by conducting interviews with 23 experts (19 nutrition and health experts and four consumers from different age groups), yielded results that have been analysed in accordance to the process motivated by Mayring (2022). The process of analysing the interview transcript has been a jointly deductive and inductive approach, since categories were already predefined by the questions of the interview guide. Nevertheless, sub-categories, which aspects the experts stress when answering the questions, were determined inductively.

Instead of a broad presentation of the process of categorization and a broad presentation of the results, Table 1 summarises the key findings based on the seven research questions. These results will be discussed in more detail in the succeeding section.

Table 1. Key findings based on the seven research questions

Research Question	Insights
<i>Q1: Purchase Factors</i>	<p>Main categories:</p> <ul style="list-style-type: none"> • Packaging (unpacked preferred) • Colour / Appearance • Brand (well-known brands) • Ingredients / nutritional values <p>The importance of the categories varies depending on product type and luxury status.</p>
<i>Q2: Packaging and Purchase Decision</i>	<p>Main categories:</p> <ul style="list-style-type: none"> • Packaging material (plastic-free, recyclable, natural) • Packaging effort • Surface of the packaging (matt, organic feel) • (Packaging) costs <p>The relevance depends on the product category and the generation of consumers.</p>
<i>Q3: Relevance of the Nutri-Score</i>	<p>Nutrition experts:</p> <ul style="list-style-type: none"> • The Nutri-Score is not helpful and provides insufficient information, lacks a holistic perspective and accurate data. • Industry representatives and consumers: • It provides guidance and negative ratings are a deterrent. • The higher the luxury status and brand loyalty, the more irrelevant the Nutri-Score becomes.
<i>Q4: Credibility of the Nutri-Score</i>	<p>A large majority do not see the Nutri-Score as credible and trustworthy; it is more of a marketing tool with a lack of government control.</p> <p>The algorithm does not reflect the entire product life cycle and distorts the actual nutritional value of the product.</p> <p>On the positive side, there is a fixed definition with clear threshold values.</p>
<i>Q5: Efficiency of the Nutri-Score</i>	<p>For the most part, there is agreement:</p> <ul style="list-style-type: none"> • The Nutri-Score is a quick orientation aid, especially for content information that is difficult to understand, but critical ingredients are not taken into account. • The algorithm can too easily be exploited and instrumentalised by producers.
<i>Q6: Nutri-Score and Greenwashing</i>	<p>Industry experts:</p> <ul style="list-style-type: none"> • There is no option of greenwashing, as the algorithm is fixed. • Nutritionists and consumers: • The Nutri-Score can easily be instrumentalised as a marketing tool and already is. • - Problems include a lack of government oversight and a holistic perspective on the nutritional value of products or a lack of understanding of the algorithm used.
<i>Q7: Improvements to the Nutri-Score</i>	<p>Emphasised especially by nutritionists:</p> <ul style="list-style-type: none"> • Revising the algorithm by adding more ingredients • Additional warnings for artificial ingredients • Independent regulatory body to coordinate the Nutri-Score • - Additional educational work on the Nutri-Score and healthy eating in general
<i>Additional Remarks by the Experts</i>	<p>Consumers:</p> <ul style="list-style-type: none"> • Previous labelling was not very helpful for comparing foods. • Only a mandatory introduction for all foods will ensure comparability. • Nutritionists: • The Nutri-Score can be supplemented by a sustainability dimension such as regionality, fair trade or an Eco-Score. • Similar to tobacco products, deterrent images can also be used for food. • Educational work is necessary for all age groups. • Industry experts: • A globally standardised solution is necessary.

5. Discussion

The aim of this study was to investigate the benefits, function, and credibility of the Nutri-Score from the perspective of industry experts, nutritionists, and consumers of different generations.

The answers to the first two general research questions are in line with the existing literature, packaging design, including colour and material plays a significant role in the purchasing decision. Accordingly, the option arises that the Nutri-Score can influence the purchasing decision via its property as front-of-package labelling. For the German market, reference can be made to the empirical study by Skretkiewicz and Perret (2023), which shows that the Nutri-Score influences the purchasing decision via two channels. The mere presence of the label on food motivates consumers to choose the healthier option. This is reinforced by the rating, the actual Nutri-Score. Positively rated products attract consumers, while negative products have a repelling effect, whereby the repelling effect is definitely more pronounced than the attracting effect. This can also be seen in the results of the interviews, in which the repelling effect is mentioned, but not the attracting effect.

There is a relatively consistent opinion, especially among consumers, that the Nutri-Score can serve as an initial guide, albeit with a lack of informative value and a lack of information on micronutrients and the manufacturing process. While consumers see it as helpful for comparison within a product group, nutritionists point out that the inadequacy of the algorithm means that comparability is not possible. Even the optional use of the Nutri-Score does not always guarantee holistic comparability within product groups.

It should be noted here that labelling obligations for ingredients and, since 2016, also for nutritional values are already regulated by the Food Information Regulation, among other things. The Nutri-Score therefore functions primarily as a visual tool to enable quick decisions to be made and also to reach and at least marginally influence the purchasing behaviour of consumers who would probably not receive more detailed information.

The participants in the interviews identified a further deficit with regard to the credibility of the Nutri-Score as a seal of quality. While nutritionists generally do not consider it to be credible, opinions differ here with consumers. This discrepancy can be attributed, among other things, to the fact that the underlying algorithm and its shortcomings are more familiar to nutritionists than to normal consumers.

The Nutri-Score is not checked by any independent body, which adds to the scepticism among the experts interviewed and raises the question of the possibility of nutritional greenwashing. This is also unanimously supported by the nutritionists, while consumers are less critical.

When asked for suggestions for improvement, it was suggested that the algorithm be supplemented with additional components and fundamentally revised. It should be noted that the algorithm has already been repeatedly criticised and adapted in the past, including when it was extended to several European countries in 2021. Most recently, the basic algorithm was extensively adapted following a discussion about the assessment of olive oil or fats from avocados. In consequence, the Nutri-Score has been adjusted in early 2024.

How the use of the Nutri-Score can be countered in the context of nutritional greenwashing can be part of a standardised information and education campaign. Informed consumers know what questions to ask about food to decide what nutritional value it offers them, and which brands have attracted positive or negative attention in the past. Similar to greenwashing in the clothing industry, indicators of critical behaviour can be identified.

The establishment of the international Nutri-Score Committee in 2021 has already been realised. The institution is independent of the (nutritional) policy objectives and decisions of individual governments and receives its funding independently of the food industry, meaning that lobbyist influence cannot be assumed. As the committee is primarily made up of nutritionists from different disciplines, the continuous scientific and empirical basis of the Nutri-Score can also be regarded as guaranteed, even though it might be biased. However, the establishment of the committee shows that the Nutri-Score does not only function as a marketing and greenwashing tool for the food industry.

To increase the benefits of the Nutri-Score, it was emphasised that the introduction of the Nutri-Score should be mandatory for all food manufacturers. In addition, a specification of daily rations could reduce the consumption of luxury foods in particular, even more than a poor Nutri-Score rating because consumers are primarily concerned with the flavour of luxury foods and less with the nutritional value of the product. The option of daily rations is already regulated to some extent in the context of nutritional declarations.

Finally, it was proposed as an overall policy measure for Germany to invest in holistic and age-independent nutrition education and to educate consumers about a healthy and balanced diet in schools, for example. As part of its nutrition policy, Germany has launched the 'National Reduction and Innovation Strategy for Sugar, Fats and Salt in Finished Products' and provides information on healthy eating in all areas of life (BMEL, 2023). This strategy can be expanded to include information about the Nutri-Score.

In summary, all experts agree that the Nutri-Score, even after seven years of practical use, is not yet perfect and needs to be further improved. However, the Nutri-Score is considered to have sufficient potential for improvement, and it is also clear that there are already clear efforts to address points of criticism from both nutritionists and consumers and that the Nutri-Score is not set in stone, but rather integrates justified criticism.

The preceding discussion and the results of the interviews illustrate that the biggest problem is not the Nutri-Score itself, but rather the consumers' understanding of what it can actually say and where it needs to be scaled back. This cannot be addressed by changing the label itself, but once again emphasises the relevance of a holistic education campaign. Such a campaign cannot assume, as has been the case up to now, that consumers will carry out this education themselves if only sufficient information material is provided but must proactively reach out to the entire population.

6. Conclusion

6.1. Practical Recommendations

In late 2024, Danone decided to abandon the display of the Nutri-Score on their products. The main argument was that products identical regarding their nutritional value are rated differently if they are consumed differently, i.e., being drunk versus being eaten. While a statement has been issued on the reason behind this change, only little empirical evidence exists to support this decision. Along the same line Peters and Verhagen (2024) find that across the Nutri-Score literature a distinct bias exists in so far as positive effects of the Nutri-Score concerning product choice primarily are reported by studies conducted by members of the research group that initiated and in part oversees the Nutri-Score algorithm.

Together with the results of this interview study, the necessity for a central coordinating and overseeing institution is established. This institution needs to be independent of the food industry, as the results of the interviews strengthen the assumption that otherwise the label

would be changed in a way to make it even easier for companies to nutritionally greenwash their products. While the institution's decision-making should be guided by scientific, empirical results, the necessity persists to control for potential biases of interest in research as well, i.e., directly via funding received and indirectly via personal involvements. Consequently, either a government institution with a distinct level of trust among the population needs to be appointed, i.e., an institution comparable to the German TÜV, or an independent NGO with a secure funding needs to be established.

A newly formed institution could furthermore take on the role of nutritional educator of the population as required by the experts as well, not solely regarding the Nutri-Score and its interpretation, but considering nutrition policy in general.

While the international Nutri-Score Committee may fulfil this role, on the one hand it is strongly linked to the initiators of the Nutri-Score, conflicting with the requirement of unbiased independence. Furthermore, it is an international organization and as such it does not consider national particularities, especially if they should prove decidedly stricter than in other involved countries. An international or at least supranational institution at the level of the European Union will make it easier to compare not only national food products, but foreign ones as well.

6.2. Limitations and Outlook

Since the interviews have been conducted over the course of 2024, changes in the Nutri-Score that led to the reaction of Danone and other food-producing companies to abandon the Nutri-Score could not be considered in the general context of the interviews. Consequently, some open questions persist for future studies.

The explicit aim of this study was to elicit the opinion of German experts. An extension of the study into a broad-scale version across all countries that have implemented the Nutri-Score directly or indirectly into their food retail would have allowed to compare differing perceptions which might allow inferences on cultural differences in nutrition and thus would have helped in adjusting the Nutri-Score in a culturally more robust version of itself.

Finally, a total of 22 interview partners have been considered, spanning most of the nutrition related spectrum of affiliations and professions and considering as well the consumer side. While this number is sufficient for a purely qualitative study, multiple professions are represented with only a single candidate. Only three candidates are selected to represent the consumer perspective. Thus, an expansion of the study in considering multiple representatives of the differing professions elicit as well differences in the perception of the Nutri-Score across health and nutrition oriented professions and the respective reasons. Additionally, expanding on the consumer perspective would provide more profound insights on a perspective that currently has almost entirely been studied with quantitative studies and experiments.

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