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# Quality Labels in the Food Sector: What do Consumers Want to Know and where are they Looking for Information?

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## ABSTRACT

This study analyzes consumers' information needs concerning quality labels in the food sector. We analyzed that by using one of the most well-known quality labels for food products in Austria as our research object (the quality label of the organization AgrarMarkt Austria, the so-called AMA Seal). Apparently, there is a lack of consumer-oriented information. Up to now, the type of information consumers of AMA sealed products demand is more or less unknown. Therefore, the objectives of this study were (1) to identify consumers' *actual use of information* and (2) their *information needs* about quality labels to provide needs-based consumer information.

Keywords: quality label, seal, information needs, consumer survey, cluster analysis

## 1 Introduction

Only few literature is available about consumers' information needs concerning quality labels in the food sector. In particular, in times of consumers' confidence loss based on food scares (Böcker and Hanf, 2000), they are important signals to regain trust of consumers. Therefore, consumer-oriented information should meet the requirements of potential information seekers. We should also know more about consumers' information needs in view of quality labels. Altogether, this helps to develop a system guaranteeing "appropriate food risk communication" (Tonkin et al., 2016, 118).

The research object of this study is one of the most well-known quality labels for food products in Austria (in the following sections we will simply use the term "AMA Seal" for it which is used at the English Website of the labels' licensing organization AMA). Because of the lack of empirical research in this field, the type of information consumers retrieve of quality labels is more or less unknown. To gain more insights into this field, the research goals of this study were (1) to identify consumers' *actual use of information* and (2) their *information needs* about quality labels (with respect to food and quality labels in general and more specific, with respect to the AMA Seal). By answering both questions we should be able to provide more information on needs-based consumer information.

The actual use of information with regard to the AMA Seal was analyzed as well as the need for user-oriented information. Data was collected through an Austrian consumer tracking household panel. In total, a sample size of  $N = 1718$  was achieved. The results are representative for the Austrian population and brought important insights into the information behavior and needs of Austrian consumers with respect to quality labels in the food sector.

## 2 EU and National quality labels

Consumers usually are unable to evaluate the quality of food products before purchase, they use quality cues like brands, prices or labels (Steenkamp, 1990; Grunert and Achmann, 2016). For the purpose of helping consumers within their evaluation of quality, the EU introduced important quality (origin) labels, namely PDO (Protected Designation of Origin) or PGI (Protected Geographical Identification) and TSG (Traditional Specialty Guaranteed).

In addition, each country is using national quality labels. EU food labeling has different aspects, e.g., to fulfill traceability requirements, nutrition labeling, serving promotional goals, etc. (Cheftel, 2005). As Cheftel (2005) points out the “diversity and complexity [of food labels and regulations] is due to the different objectives and requests from the various stakeholders”. Some of the food labels try to inform consumers about certain aspects (e.g. GMO free), contain nutritional information, trade-related information, or quality grading, just to name a few (Cheftel, 2005). This led, intended or unintended, to a huge variety of different EU and national labels officially in use – not to name all other private based labels – more and more confusing consumers.

However, “the role of the EU quality labels in consumer decision-making seems to be relatively small” (Grunert and Achmann, 2016). In contrast to the internationally recognized quality schemes, the AMA Seal is one of the most well-known quality labels in Austria. It is usually applied by Austrian consumers to assess food quality. Asked for their knowledge of quality labels, and even if the graphic signs were not presented to consumers (i.e. recall test) more than half of the Austrian respondents immediately named the AMA Seal in representative surveys. If quality labels are presented to interviewees, usually more than 90% identify the AMA Seal.

### 2.1 Quality management and food labeling in Austria

Food quality has several dimensions: sensory quality (hedonistic quality), health, technical processes, intangible quality aspects (e.g. ecologically sustainable processing), psychological aspects, and economic aspects – just to name the most important ones. Peri (2005) presents nine different consumer requirements, which have to be included when discussing food quality (safety, commodity/conformity, nutrition, sensory, production context, ethics, guarantees, packaging system and market). “In addition to sensory quality, there are factors such as nutritional content, safety, shelf-life, and reliability that contribute to the consumer’s overall opinion of a food product” (Lawless, 1995, 191). Consequently, a food product can be considered to be of high quality with respect to e.g. health but not to ecology. Whenever we discuss quality management and labeling in the food system, we have to take into account that the quality management system in the food sector is multi-dimensional.

### 2.2 Labeling food products in Austria

There are numerous quality labels available at the Austrian market (provided by public authorities and private ones like e.g. retailer led quality schemes discussed by Fearne et al., 2001 for the beef sector) to signal specific quality cues to consumers. The Austrian AMA Seal (in German “AMA Gütesiegel”, established by AgrarMarkt Austria a governmental marketing association comparable to SOPEXA in France or the former CMA in Germany) is a combination of a label indicating the Austrian origin of the agricultural product (in case of animal products also origin of feed and young animals) and assuring a high level of quality. It is established and controlled to make sure that the trust of consumers can be maintained (within the domestic food market but also on an international level).

As mentioned above, EU regulations are demanding adequate control mechanisms within member states. In Austria, the AMA Seal is a registered trademark. The main tasks and obligations of the licensing organization are defined by law. The organization has to market Austrian food products within the domestic and foreign markets. It has to maintain and promote high quality standards for Austrian food production. If producers outperform national and international (EU) food production quality standards and meet the standards of the licensing organization, they may use the AMA Seal for their products as licensees.

All AMA Seal regulations are developed in co-operation with experts from the relevant food sectors. They are only published if the Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) agrees to these regulations. The AMA Seal regulations contain essential processing, labeling, and documentation requirements in connection with all measures guaranteeing high hygienic standards. Many of them are far beyond legal requirements. This is an important difference to the huge number of private based quality labels, which have no such governmental and official legitimation comparable to the AMA Seal (the latter are based on civil rights’ contracts).

**Quality requirements:** Food producers use the AMA Seal voluntarily, but if they do so, they have to fulfill all relevant guidelines of the quality program. Examples of quality measures include that in meat production the use of antibiotics to increase weight gain is forbidden, or in beef production 70% of the used feed has to come from the own farm. By introducing the AMA Seal, the quality of labeled Austrian food products undergoes a continuous improvement process.

**Origin:** The origin of the food has to be traceable. The value giving raw material must be of Austrian origin, and processing has to be done in Austria – unless selected ingredients are not available in Austria, up to 1/3 of the total food may come from outside Austria. And, finally, all steps of the food processing are controlled (cross-sectorial, from field to shelf). For e.g. in the case of meat production all animals bought from farmers for fattening have to be from Austria. Additionally “Pastus+” has been established as part of the AMA quality assurance system to guarantee the traceability of feed.

**Finances:** Food producers have to pay license fees to finance the whole quality system. Food producers can license single products or product lines as a whole if they fulfill the requirements. Usually, fresh products like milk and milk products, meat and meat products, fruits and vegetables, and eggs are carrying the AMA Seal. Some processed food products like cooking oil, deep frozen vegetables, bread and pastries, fruit juice, and beer also carry the AMA Seal. Meanwhile, thousands of Austrian producers are using the quality label (mainly milk producers, cattle and pork farmers, chicken farmers, but also a large number of food processors). Almost 100% of all dairy farmers in Austria are part of the AMA Seal program.

**Control mechanisms:** By introducing comprehensive guidelines for the AMA Seal, the provenance and quality is quite easy to be evaluated by consumers. “... quality control is essential in the food industry, and efficient quality assurance has become increasingly important” (Wilcock et al., 2004, 56). Consumer trust is an integrative part of the communication goals of the licensing organization, by guaranteeing independent and comprehensive control mechanisms (based on a 3 step control process): (1) Each licensee has to provide an adequate corporate control system, where all results of the internal control system are documented; (2) Besides internal control mechanisms, accredited agencies are effectively controlling on-site all relevant quality aspects by using pre-defined check lists; (3) in order to steadily improve the AMA Seal guidelines, the licensing organization itself provides controls by their own employees or external experts. Confirming D’Souza et al. (2007) this is a very important point: Quality labels have to be provided and controlled by external organizations with respect to pre-defined criteria.

### 2.3 Consumer information needs with respect to food safety

It is well documented that if consumers are not able to assess superior quality, they will not be willing to pay more (Akerlof, 1970). Furthermore, there is a rising demand for safe and high quality food, a trend which has already lasted for decades (Mascarello et al., 2015). Therefore, producers are usually eager to use quality cues to signal the high quality of their products to consumers. In the food sector, quality labels (governmental and non-governmental) are usually applied for this purpose as well as origin labels and traceability systems (Verbeke et al., 2007).

If consumers already know something about a product they are interested in, their information search is affected (Alba and Hutchinson, 1987). Therefore, if they know at least a little bit about specific quality labels, they will probably trust food products carrying these labels. In our case, we wanted to know more about consumers interested in this kind of information.

Information should be comprehensive and detailed to help consumers in their purchase decisions (Moussa and Touzahni, 2008). If trustworthy information is available, effectiveness of quality label related expenses can be increased significantly. Trustworthiness is especially important in the case of attributes that cannot easily be assessed like method of production or product ingredients. This is considered to be the core function of quality labels: communicating quality related information that cannot immediately be evaluated by consumers (Grunert et al., 2002). Of course, this does not imply that all consumers will actively search for quality related information. Therefore, it is especially interesting to learn more about the type of consumers, who are interested in label related information and where they are usually looking for this information.

## 3 Methods and survey

To get more insights into information behavior and needs of consumers in view of quality labels and covering the Austrian population, we decided to conduct an Austria wide survey by use of consumer tracking panel data. By doing so we can guarantee that the results are transferable to the Austrian population. In total, the consumer tracking panel consists of 2800 households representing the food

markets' consumer side. All of them were contacted by means of a questionnaire. The basis of this questionnaire are a comprehensive literature review and a qualitative focus group. The questionnaire contained questions covering the following points:

- Importance of attributes when buying food (price, method of production, Austrian provenance, social and ecological parameters, genetically modified organism, etc.)
- Information sources consumers generally use when searching information about food (Internet, social media, peer groups, etc.) and how often they use these sources
- Trust in quality labels in general
- Knowledge about the AMA Seal (in general) and attitudes towards the quality label
- Information sources consumers use when searching information about AMA Seal, inclusive an evaluation of these sources
- Frequency of use of information sources
- Reasons for not using information sources (not interested, already informed, not trustworthy, etc.)
- Information sources consumers would like to use
- Kind of information consumers would prefer (animal husbandry, feeding, traceability of products carrying the quality label, quality controls, etc.)

Out of the qualitative results of the focus group and the comprehensive literature review, we assumed that there is a group of consumers that are interested to learn more about food in general and, more specifically, about the AMA Seal. Furthermore, we assumed that this group is already actively searching out food related information using different information sources. Depending on their degree of involvement, they will expect (more general or even detailed) information about the quality label and they will prefer certain communication channels. If we succeed in identifying this group of consumers, user based information can be generated and will help to provide information that meets the information needs of consumers. This implies that there is a section of consumers, that are not and were not interested in quality label related information. As we have no knowledge about these consumers, the main goal of the study was to identify clusters of consumers with homogeneous information needs.

## 4 Results

Altogether, the return rate from the sample of 2800 households amounted to about 60% with  $N = 1718$ . This is an excellent result, which is due to the fact that these households are used to returning their purchase data regularly. The general socio-demographics of the sample are closely comparable to the overall Austrian population. Therefore, the results are considered to be representative for the Austrian food market.

### 4.1 Knowledge and information usage and needs

Almost all, about 99%, knew the AMA Seal, which is even higher compared with other studies (see above). Most consumers already looked for general food related information (only about 14% are not looking at all for food related information). However, almost 2/3 of the respondents had never actively searched any information about quality labels before. Most of them are simply not interested in doing so, or they suppose subjectively, that they already know at least something about the AMA Seal (76% agree at least partially to the relevant statement). The overall knowledge about quality labels in general is considered to be even lower (56% agree). The interesting relationship here is that there is a positive correlation between (subjective) knowledge and trust in the quality label ( $r = 0.514$ ). So the following hypothesis seems to be true: *If consumers know more about a quality label, trust in the label will increase.*

Confirming the non-information seeking respondents, acquiring information about quality labels is too time-consuming, respondents already feel sufficiently informed or they did simply not know that there are any information sources available, or where to look for information. Actually, the main sources of information concerning *food in general* are leaflets (e.g. distributed in order to inform about food quality aspects, provenience of food, nutrition, etc.), peer groups (family and friends), newspapers, TV, and publications of consumer protection organizations (Figure 1).

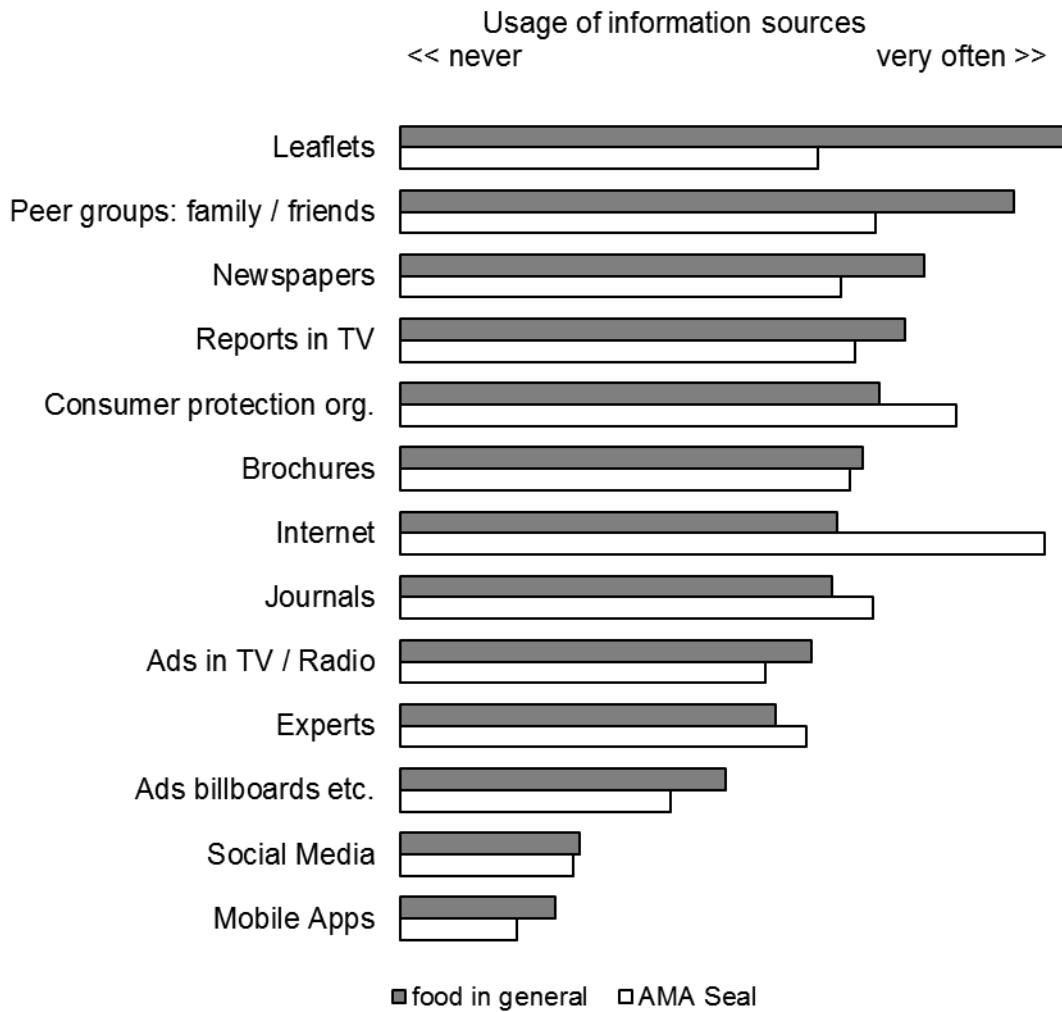


Figure 1. Importance of information sources (food in general vs. AMA Seal) – frequency of usage

Concerning information usage about the AMA Seal, the sources are significantly different compared to information use in respect to food in general: Internet, consumer protection organizations, peer groups, and publication in journals are in the case of the AMA Seal the most important sources for this purpose. For both purposes, social media and mobile apps (the latest technologies) are usually not used to acquire information about these topics. However, this fact does not imply that no information about e.g. food is spread. Sharing of food related information is not for the purpose to get better informed about food. “Entertaining” food information – like pictures of the last meal – are spread on a regular basis by users themselves (in the Internet termed as “food porn”).

This finding was the most important insight for the licensing organization: *One must focus on the Internet if quality label related information should be transferred to users* (which is an explicit goal of the licensing organization).

#### 4.2 Cluster Analysis

As mentioned above, a large part of the sample never looked for information about quality labels. Therefore, the sample was separated into two sub-samples by means of a filter question: those who never looked for quality label related information (C0; n = 1103) and those who already did (n = 599; missing = 16). Information seekers were further classified by means of a hierarchical cluster analysis (in view of their information acquisition behavior referring to the AMA Seal). Two groups or segments of consumers were identified. Considering their use of information sources, we named these clusters: “Low information demand” (C1; n = 350) and “Heavy information demand” (C2; n = 249).

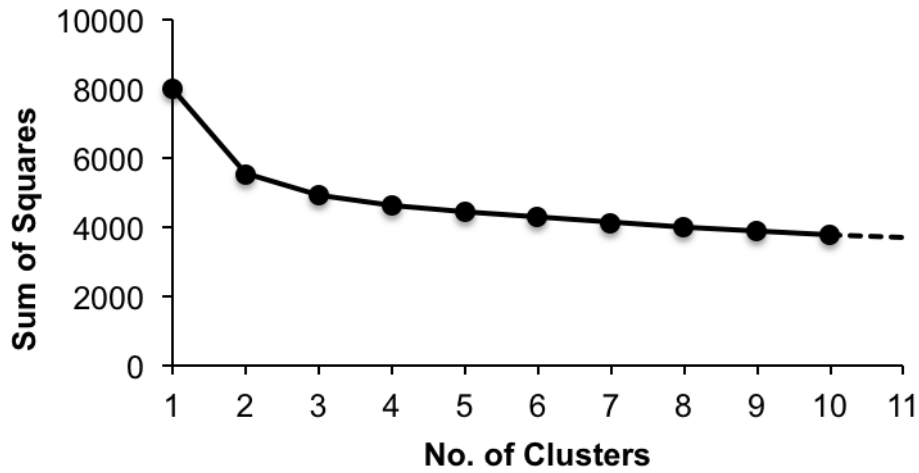


Figure 2. Cluster analysis, Elbow criterion (Information use, AMA Seal)

The decision to select a 2-Cluster-solution was based on the elbow criterion, where the sum of squares is compared with the relevant aggregation step (Figure ; Backhaus, 2011). The point at which the information loss (additional sum of squares) increases significantly from one aggregation step to the next (= the elbow) shows us which cluster solution we should take (in our case 2 cluster C1 and C2). Including C0 (no information demand), these groups amount to 20% (C1) and 15% (C2), respectively (Figure ).

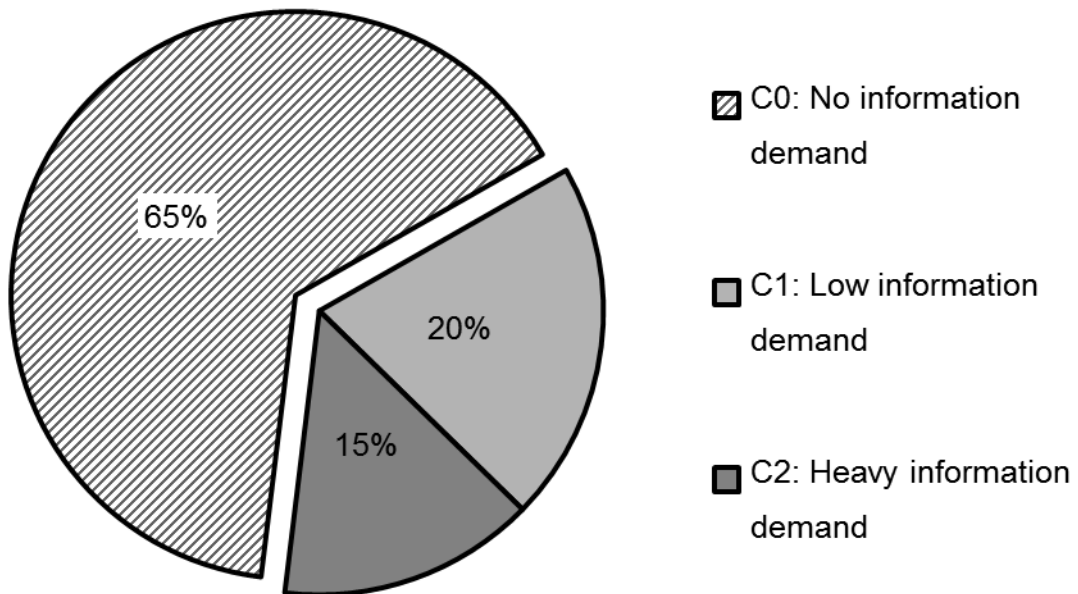


Figure 3. Cluster analysis – information users

Including the respondents who never used information sources (C0), the core group of people actively and intensively searching for quality label related information sums up to 15% ( $\pm 2\%$ ) of all respondents.

The most important sources where information is expected to be found is the Internet (this is valid for C1 and C2, there are no significant differences). However, there are significant differences between the clusters concerning other channels: Heavy users are much more aware of peer groups, experts, and written communication (newspapers, journals, etc.). Despite “Internet”, all differences are significant between C1 and C2 (Table 1).

**Table 1.**  
Average importance (frequency of use) of information sources (AMA Seal)

|                           | Low information demand |           | High Information demand |           | Total |           | F     | Sig.  |
|---------------------------|------------------------|-----------|-------------------------|-----------|-------|-----------|-------|-------|
|                           | Mean C1                | Std. Dev. | Mean C2                 | Std. Dev. | Mean  | Std. Dev. |       |       |
| Internet                  | 1.82                   | 0.97      | 1.89                    | 0.97      | 1.85  | 0.97      | 0.6   | 0.421 |
| Social Media              | 3.64                   | 0.66      | 3.14                    | 0.89      | 3.44  | 0.80      | 61.8  | 0.000 |
| Mobile Apps               | 3.76                   | 0.56      | 3.36                    | 0.85      | 3.59  | 0.72      | 48.0  | 0.000 |
| Peer grp. family, friends | 2.88                   | 1.04      | 1.93                    | 0.91      | 2.48  | 1.09      | 133.0 | 0.000 |
| Experts                   | 3.12                   | 1.01      | 2.06                    | 0.89      | 2.68  | 1.09      | 178.7 | 0.000 |
| Leaflets                  | 3.27                   | 0.86      | 1.78                    | 0.69      | 2.65  | 1.08      | 510.3 | 0.000 |
| Journals                  | 3.06                   | 0.92      | 1.72                    | 0.76      | 2.50  | 1.08      | 357.5 | 0.000 |
| Consumer protect. org.    | 2.72                   | 1.09      | 1.58                    | 0.72      | 2.25  | 1.11      | 207.0 | 0.000 |
| Brochures                 | 3.13                   | 0.84      | 1.68                    | 0.63      | 2.53  | 1.05      | 530.4 | 0.000 |
| News papers               | 3.22                   | 0.81      | 1.71                    | 0.69      | 2.59  | 1.07      | 569.7 | 0.000 |
| Ads in TV, Radio          | 3.38                   | 0.72      | 2.05                    | 0.86      | 2.83  | 1.02      | 418.3 | 0.000 |
| Ads billboards etc.       | 3.59                   | 0.57      | 2.48                    | 0.91      | 3.13  | 0.91      | 331.6 | 0.000 |
| Reports in TV             | 3.07                   | 0.94      | 1.73                    | 0.78      | 2.52  | 1.10      | 341.5 | 0.000 |

Scale: 1 = very important (frequently used) ... 4 = not important (never used); N = 599

If we assume that the information demand shown in the past will be more or less relevant for future behavior (which is not completely true; see below), it can be expected that the groups of consumers identified above will also need different channels and will show different intensity concerning information demand. The core group which is eager to get more information about the quality label (and probably concerning other food related attributes, too) is group C2. Concerning socio-demographics we found that these group members are different from the average only in respect to age: They seem to be a little bit older than the average (more exactly: information demand rises with age; this relation is significant below 0.000; Table 2 and Table 3), but no other relation between the information demand and socio-demographics could be detected.

**Table 2.**  
Age household leader \* Cluster AMA Seal C0-C1-C2 Cross-tabulation

|                         | Cluster AMA Seal         |             |                           |             |                            |             | Total       |             |       |
|-------------------------|--------------------------|-------------|---------------------------|-------------|----------------------------|-------------|-------------|-------------|-------|
|                         | C0 No information demand |             | C1 Low information demand |             | C2 High information demand |             |             |             |       |
| Age of household leader | 0 to 24 years            | 30          | 2,7%                      | 9           | 2,6%                       | 2           | 0,8%        | 41          | 2,4%  |
|                         | 25 to 29 years           | 61          | 5,5%                      | 19          | 5,4%                       | 7           | 2,8%        | 87          | 5,1%  |
|                         | 30 to 34 years           | 119         | 10,8%                     | 29          | 8,3%                       | 13          | 5,2%        | 161         | 9,5%  |
|                         | 35 to 39 years           | 110         | 10,0%                     | 35          | 10,0%                      | 22          | 8,8%        | 167         | 9,8%  |
|                         | 40 bis 49 years          | 298         | 27,0%                     | 87          | 24,9%                      | 61          | 24,5%       | 446         | 26,2% |
|                         | 50 bis 59 years          | 247         | 22,4%                     | 81          | 23,1%                      | 67          | 26,9%       | 395         | 23,2% |
|                         | 60 bis 64 years          | 76          | 6,9%                      | 46          | 13,1%                      | 29          | 11,6%       | 151         | 8,9%  |
|                         | 65 years +               | 162         | 14,7%                     | 44          | 12,6%                      | 48          | 19,3%       | 254         | 14,9% |
| <b>Total</b>            | <b>1103</b>              | <b>100%</b> | <b>350</b>                | <b>100%</b> | <b>249</b>                 | <b>100%</b> | <b>1702</b> | <b>100%</b> |       |

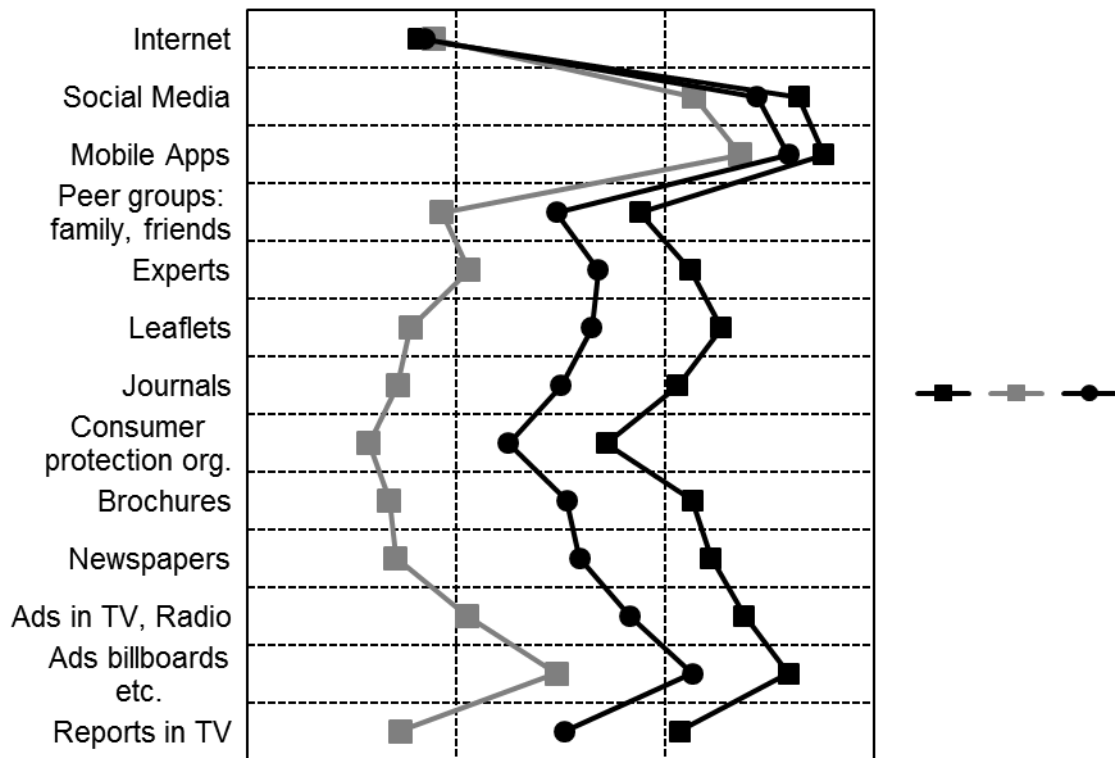
**Table 3.**  
Chi-Square Tests Age of household leader \* Cluster AMA Seal C0-C1-C2

|                              | Value               | df | Asymp. Sig. (2-sided) |
|------------------------------|---------------------|----|-----------------------|
| Pearson Chi-Square           | 35,076 <sup>a</sup> | 14 | 0,001                 |
| Likelihood Ratio             | 36,379              | 14 | 0,001                 |
| Linear-by-Linear Association | 18,409              | 1  | 0,000                 |
| N of Valid Cases             | 1702                |    |                       |

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 6,00.

**4.3 Information demand and sources**

With regard to the future information supply, important topics and information sources were identified which are highly relevant to all user groups. The most important topics are GMO food, animal welfare, and traceability of food. Special emphasis should be drawn to the core group C2, the heavy information seekers, and their behavior when seeking information. The most important information sources are amongst others the Internet (for all groups), information provided by consumer protection organizations, word of mouth communication with family or friends, and reports in Journals and TV (**Error! Not a valid bookmark self-reference.**).



**Figure 4.** Average importance (frequency of use) of information sources (AMA Seal) (1 = very important to 4 = not important at all; N = 599)

If we come back to information use related to *food in general*, information sources are different. The heavy information demand cluster C2 reported to use most information sources more often than C1 and



C0 (Figure ). Information sources like trustworthy publications from consumer protection organizations, leaflets, brochures, and articles in newspapers are of primary importance for C2, far more important than for the AMA Seal. This might be due to the fact that general publications in the Internet are not seen as very trustworthy in general (in spite of those coming from official organizations). However, this is only an assumption which was not proven within this study.

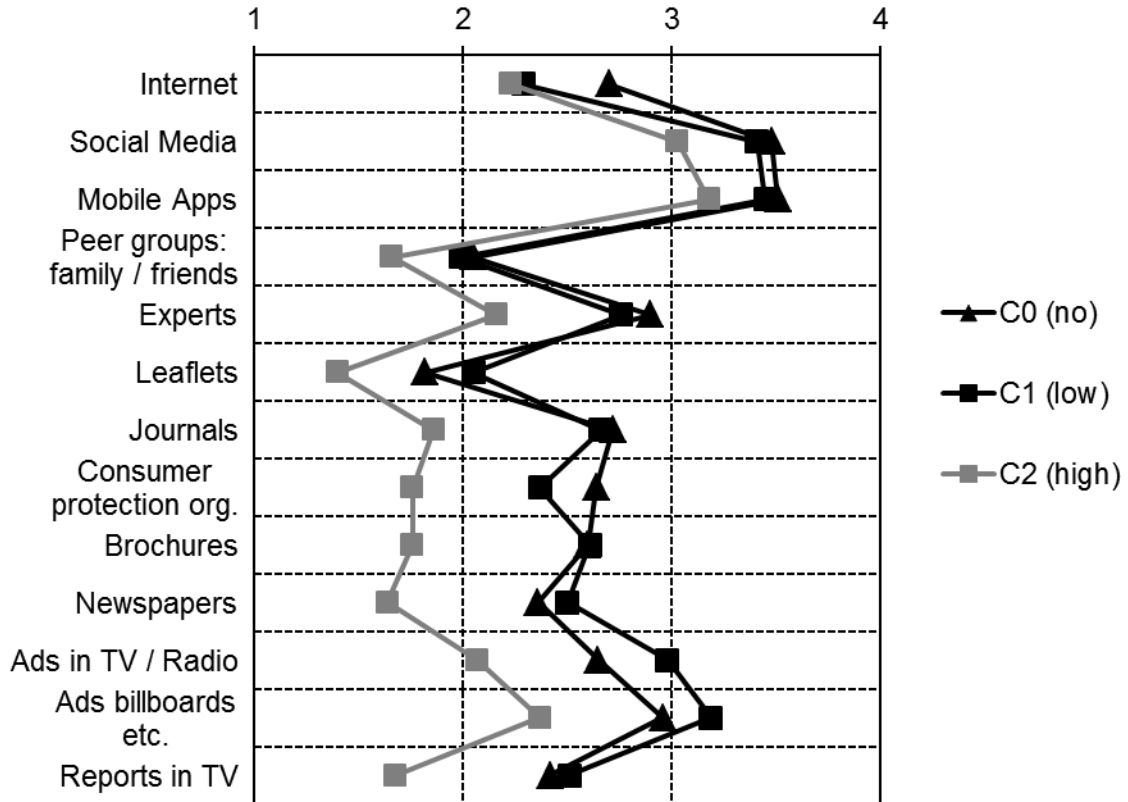


Figure 5. Average importance (frequency of use) of information sources (food in general) (1 = very important to 4 = not important at all; N = 1702)

## 5 Discussion

The research object of this study was one of the most famous quality labels in the Austrian food sector. The survey delivers results which are representative for the Austrian market. However, if we want to transfer the results to other comparable objects (like other quality labels, private labels of trade organizations, etc.) we have to take into account the specifics of the AMA Seal: it is very well known in Austria and it is a quality label guaranteed by a governmental organization. Because of the latter, trust and knowledge might be significantly higher compared to other labels.

Nevertheless, some generalizations are considered to be valid for other labels as well: The primary information source for all relevant topics with respect to food labeling seem to be the Internet (but not for food in general). It is by far the most important source where consumers will look for information. Not all of them can be motivated to get more information about food in general and quality labels. But there is a core group of consumers which is especially eager to acquire information. The size of it might differ and depend on the overall publicity, actual developments in the food sector like food scares, and their severity as discussed by Böcker and Hanf (2000), technological developments in food processing, general trends in food consumption, or related factors. The members of this group are especially interested in food related topics and amounted to 15% in our empirical research. For other quality labels the size of the group might differ, but in general, some important characteristics of the group members could be identified: They are using multiple information platforms, discuss with family and friends, but new forms of communication (social media, mobile apps) are – up to now – of only minor importance for this core group. The group seems to be more interested in all food related topics and its members are a little bit

older than average. In general, this group could be considered to be the interested part of the population concerning food related topics. Therefore, it is of high relevance to use information sources especially designed for these group members.

In all, the group highly interest in AMA Seal information represents only a fraction of the total population (15%), which seems reasonable because not all consumers show high involvement concerning food, and involvement influences information search and usage. Most of the interviewees were not interested to get more information about food labels. This behavior may be also explained by consumers' reluctance towards information processing (Verbeke et al., 2007). Amongst other, Verbeke et al. (2007) name irrelevant or useless information and opportunity cost of information search too high in comparison to the expected benefits from being more informed as reasons for this behavior (which is not rational from a theoretical point of view). Nevertheless, as Böck and Hanf (2000) point out, food processors should find ways of "highlighting their own responsibility" (Böck and Hanf, 2000, 480) to increase consumers' trust. This is of special interest in case of e.g. food scares but will also help under regular market conditions. Following their considerations, food companies should use signals that prove their reliability – and have to find ways of informing the public about the meaning and traceability of the used quality labels.

Of course, the depth of the information is limited due to the empirical approach of the study. More insights into consumer information behavior could be gained by use of other research methods like qualitative interviews with consumers. Via this approach more information e.g. about consumers' motives when buying food, their usage of quality cues and food labels, and of in-depth information concerning quality labels could be gained. As our society is eager to promote healthy and sustainable consumption behaviors, this could further improve nutrition behavior at least for interested parts of the population; their knowledge about food and food labeling would increase. In this context, simple and easy ways of accessing and retrieving the relevant information are beneficial.

## References

- Akerlof, G. A. (1970). The market for 'lemons': quality uncertainty and the market mechanism. *Quarterly Journal of economics*, **84**(3): 488-500.
- Alba, J. and Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of consumer research*, **13**(4): 411-54.
- Backhaus, K. (2011). *Multivariate Analysemethoden: eine anwendungsorientierte Einführung*. Berlin, Springer.
- Böcker, A., Hanf, C.-H. (2000). Confidence lost and — partially — regained: consumer response to food scares. *Journal of Economic Behavior & Organization*, **43**(4): 471-485.
- Cheftel, J. C. (2005). Food and nutrition labelling in the European Union. *Analytical, Nutritional and Clinical Methods*, **93**(3): 531-550.
- D'Souza, C., Taghian, M.; Lamb, P., and Peretiatko, R. (2007). Green decisions: demographics and consumer understanding of environmental labels. *International Journal of Consumer Studies*, **31**(4): 371-376.
- Fearne, A., Hornibrook, S., and Dedman, S. (2001). The management of perceived risk in the food supply chain: a comparative study of retailer-led beef quality assurance schemes in Germany and Italy. *International Food and Agribusiness Review*, **4**(1): 19-36.
- Grunert, K. G., Aachmann, K. (2001). Consumer reactions to the use of EU quality labels on food products: A review of literature. *Food Control*, **59**: 178-187.
- Grunert, K. G.; Bech-Larsen, T., und Bredahl, L. (2000). Three issues in consumer quality perception and acceptance of dairy products. *International Dairy Journal* **10**: 575-584.
- Lawless, H. (1995). Dimensions of sensory quality: a critic. *Food Quality and Preference*, **6**: 191-199
- Mascarello, G., Pinto, A., Parise, N., Crovato, S., and Ravarotto, L. (2015). The perception of food quality. Profiling Italian consumers. *Appetite*, **89**: 175-182.
- Moussa, S.; Touzani, M. (2008). The perceived credibility of quality labels: a scale validation with refinement. *International Journal of Consumer Studies*, **32**(5): 526-533.
- Peri, C. (2005). The universe of food quality. *Food quality and preferences*, **17**(1): 3-8.
- Steenkamp, J. B. E. (1990). Conceptual model of the quality perception process. *Journal of Business Research*, **21**(4): 309-333.

- Tonkin, E., Webb, T., Coveney, J., Meyer, S. B., and Wilson, A. M. (2016). Consumer trust in the Australian food system – The everyday erosive impact of food labelling. *Appetite*, **103**: 118-127.
- Verbeke, W., Frewer, L. J., Scholderer, J., and De Brabander, H. F. (2007). Why consumers behave as they do with respect to food safety and risk information. *Analytica Chimica Acta*, **586**: 2–7.
- Wilcock, A., Pun, M., Khanona, J., and Aun, M. (2004). Consumer attitudes, knowledge and behaviour: a review of food safety issues. *Trends in Food Sciences & Technology*, **15**(2): 56-66.