MEASURING INFORMATION QUALITY ON THE INTERNET A USER PERSPECTIVE

(Research Paper)

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Abstract: Research into information quality on the internet, in particular on websites, has become increasingly important in recent years. In this paper a research project is described in which a measurement instrument was developed that enables the information quality of websites to be determined and analyzed from the customer perspective. The measurement instrument was developed in several stages and on the basis of a methodical-theoretical approach. In a first step, previous research results and measurement instruments were systematically analyzed. In a second step, these results were adjusted and supplemented on the basis of a qualitative study. A quantitative test of the measurement instrument is planned.

INTRODUCTION AND BACKGROUND

The concept of information quality (IQ) is not new. However, in recent years it has been enjoying increasing awareness in research. The work of Wang/Strong [41] is named [26] [27] [38] as the main cornerstone for this trend particularly in the English-speaking area. At the same time, conferences on IQ such as the "International Conference on Information Quality" at Massachusetts Institute of Technology (MIT) or the "German Information Quality Management Conference" of the German Society for Information and Data Quality (DGIQ) and many different national and international workshops have taken place. A few researchers have already analyzed and structured this variety of research projects on a meta-level, in an attempt to register the new research area of IQ, its roots and theoretical basis (cf. for example [10] or [26] on the importance of IQ as a separate research area).

As long ago as 1999, Wang et al. [42] wrote that there were few systematic approaches in existence for measuring IQ. A great many measurement instruments have come about in the meantime. These are most frequently intuitive, ad-hoc surveys of IQ aspects relevant from the perspective of a researcher [42]. In addition, it is possible to differentiate between three types of investigation and analysis of the multidimensional construct of IQ [25]. They may be collected empirically among information users (e.g. [37] or [41]) or, alternatively, by literature analyses of previous research projects on the subject (e.g. [3] or [22]). The final option is to focus on objectively or automatically measurable aspects of IQ (e.g. [18]).

Measurement criteria ascertained empirically among information users may contain inconsistencies, redundancies and/or omissions. This means that some of the identified aspects are dependent on one another (not orthogonally), are not generally recognized or are forgotten [35] [36]. To prevent or minimize such shortcomings, one possibility – besides the options mentioned by Lee et al. [25] – is a theoretical investigation of the construct of IQ (as conducted for example in [15] or [35]). Theory-based approaches, however, are also not completely free of shortcomings. For example, Wang/Strong [41] write that these are often better suited for optimizing the information preparation processes and less so for determining IQ from the user's perspective.

In the still relatively new discipline of IQ research, there is already an astonishing quantity and variety of measurement instruments for the many different domains (cf. for example the surveys in [8] or [24]). A majority of the research focuses on IQ in businesses, in which the information users are normally the employees. Only a small proportion deals specifically with IQ of websites, which (except in the special case of the intranet) are aimed at target groups outside companies. Thus a search for the keyword "Information Quality" in the "Business Source Premier" database (which contains the full text of over 3,600 academic journals with an economics background) since the year 2000 produces at least 94 hits (as at July 2010). However, only seven of these contain a reference to the internet. Even at the "International Conference on Information Quality", papers with an internet reference are sparsely represented. Of the 360 published papers from 13 such conferences held from 1996 to 2008, only 20 make any reference to the internet. The concept of "internet reference" was very broadly defined for this purpose and every published paper which contains terms from the internet environment (including e-commerce, online registrations, etc.) was counted. The number of articles which deal with the measurement of IQ on the internet, that have developed their own measurement approaches or have used existing known ones, is rather low in relation to the total quantity of papers published on the subject of IQ.

Nevertheless, a total of 28 academic papers were found in an intensive literature search. All of these contain a measurement instrument which is suitable for determining IQ on the internet. Five of them are generic instruments which are also suitable, according to their developers, for determining IQ on the internet (e.g. [40] or [41]). Not taken into account are papers which deal with the subject of measuring IQ on the internet (e.g. [39]) but do not contain a measurement instrument. Other instruments in the internet context which do not look at IQ from the customer perspective are likewise omitted (such as e.g. intranet-specific instruments [11]).

On three occasions, two published papers were summarized for the analyses. In the first case a published paper corresponds to a further development ([17] based directly on [41]). The two other cases are two papers published on the same subject in different publications ([5,38] and [14,15]). This leaves, as the basis for the literature analysis, a total of 25 studies which contain a measurement instrument for determining IQ on the internet [1] [3] [5,38] [7] [9] [12] [14,15] [17,42] [19] [20] [21] [22] [23] [28] [30] [31] [32] [33] [37] [40] [43] [44] [45] [48] [49].

From the analysis it emerges that 20 of the 25 studies have developed or derived the instruments on the basis of literature. Only one contains attributes that have been put together intuitively or on an ad-hoc

basis [1]. A few instruments establish a theoretical reference, but only one is developed on a completely theoretical basis [14,15]. At least three studies contain their own empirical investigations for developing a suitable instrument [33] [37] [41]. What is interesting is that this is already a somewhat older instrument.

In total, ten of the publications found refer in various forms to Wang/Strong [41]. One research project translated the measurement instrument into German [5,38]. Others used some elements [19] [23] [32] [48] or even the whole instrument [20] [21] [44] for their own studies.

Caro et al. [3] use the categories of Wang/Strong [41] for structuring their 33 identified attributes. Knight/Burn [22] use them for the description and implementation of their 20 attributes. This indicates the importance of Wang/Strong [41], Kahn/Strong/Wang [17] and all other works by these researchers for this area of research.

RATIONALE AND PURPOSE

For information users, the importance of IQ is not only in decision-making [16]. Whether or not information users are satisfied with the quality of information provided also influences their attitude and behavior [9]. Thus the user becomes the center of interest when the requirement for IQ is being established [44]. However, so that IQ can be systematically measured and optimized for better fulfillment of customer needs, a suitable measurement instrument is essential.

The object of the work is to develop a literature-based and theoretically, methodically and empirically founded measurement instrument for determining IQ on the internet from the user's perspective. In doing so, previous research projects will be worked on systematically and methodically, and supplemented by means of a qualitative investigation. The basis of this is described in the following section.

METHODS

Candid discussions with internet users reveal that evaluation criteria for determining the quality of websites exist on different levels of abstraction. Thus the statements *"The website should convey a pleasant shopping experience."*, *"The website should be easy to use"*, *"Adequate product information should be available"* or *"I think it is important for a website to have a sitemap"* are becoming increasingly specific in their detail. So-called means-end chains [47] have been found useful for resolving such difficulties. Thus correlations of individual or multiple *concrete cues* or functions (means) on websites and the *perceptual attributes* are described. These attributes are put into groups and assembled into *dimensions*. Several dimensions produce a *higher-order abstraction*. The quality of websites from the customer's perspective is formed from several such higher-order abstractions. In a behavior-oriented perspective, the perceived quality ultimately has an influence on the attitude, behavioral intention and behavior of the customer (end) [46]. Thus the quality ultimately also influences the success of a website [4] [6].

This method enables a great many different statements from interviews or results of literature analyses on various aspects of website quality to be integrated into a measurement instrument. A means-end chain was also used as the methodical basis for the extensive study to develop the E-S-QUAL approach, an instrument for determining service quality in online purchases [34].

The functioning of means-end chains for determining IQ evaluation criteria can be explained using a winemaker's website as an example. For the sake of simplification, only the "Description of the actual wine year" (e.g. climate, quality of grapes, progress of development of the vineyard, etc.) and "Actual list of prices" (e.g. prices of different vintages) are considered as *concrete cues* for the purposes of the example. In the example, "The information contained on the web-site is up-to-date" (consisting of two concrete cues) and "The structure of the website is logical" (with only one concrete cue) are named as possible *perceptual attributes*. Several attributes can be combined into *dimensions*. In the example, the dimension "Timeliness" consists of just one attribute, whereas the "Representational consistency" dimension consists of two attributes. One or more dimensions can finally be formed into *higher-order abstractions*. All higher-order abstractions together make up the "perceived IQ" of the website.
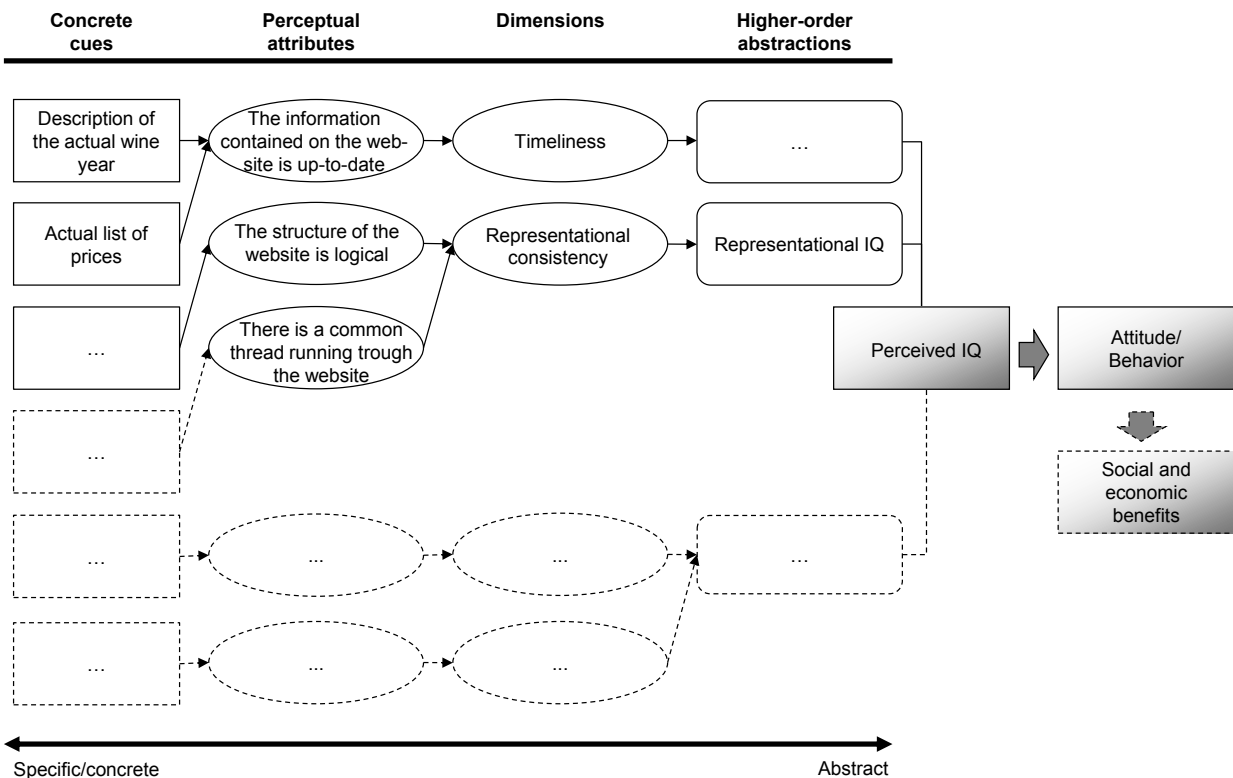

Figure 1: Example of a means-end chain.

The dimension "Representational consistency" is assigned to the higher-order abstraction "Representational IQ". Further dimensions, such as e.g. "Concise presentation", are possible depending on the object and purpose of an investigation. In the example, the higher-order abstraction in which the dimension "Timeliness" is categorized is left open. With such means-end chains it is possible for a complex construct such as IQ on the internet to be systematically broken down and analyzed.

If a user rates the information provided by a wine producer on a website in a specific context as being positive with regard to "Timeliness" and "Representational consistency" (and other possible dimensions), then the perceived IQ of the website positively influences the attitude and also ultimately the behavior of the customer. Negative effects can be expected if the criteria are not fulfilled. If the considerations from the research into attitude and behavior are also taken into account, then social and economic effects will also ultimately be determined by the behavior.

These methodical-theoretical principles were used in the work to systematically analyze all of the measurement instruments found. The basis provided the initial analysis of the existing 25 measurement instruments, resulting in a total of 254 concrete cues, 271 attributes, 93 dimensions and 29 higher-order abstractions. The subsequent systematic analysis enabled to condense this vast amount of dimensions and attributes to a total of 21 dimensions and 134 attributes of IQ. The challenge lied in the fact that scholars differ in their understanding of the various attributes and terms, which leads to an inconsistent use of the terms in research [3]. Moreover, some authors use specific terms as attributes while others refer to the same term as a dimension or list it as a criteria. This impedes a direct comparison of the proposed measurement instruments. Nevertheless, the same four higher-order abstractions as already used in Wang/Strong [41] were provisionally used. This now formed the basis for the analysis of the qualitative study in which the results of the literature analysis were reviewed and supplemented (cf. [2] for full documentation of the study).

An extensive qualitative research design modeled on Mayring [29] was used as the basis for the qualitative study in the Swiss wine market. Eight carefully selected users of Swiss wine producer websites were surveyed. The data collection, processing, analysis, communicative validation and interpretation took place between May 2009 and March 2010.

The interviewees were confronted in problem-centered interviews first with open and then with closed questions. It was only in the closed part of the interview that the findings and dimensions of IQ resulting from the literature analysis played an important role.

In total almost 26 hours of data material was recorded in the eight interviews and the communicative validations. On the basis of this, 185 pages – in other words, 2,304 paragraphs i.e. changes of speaker, 80,462 words or 496,016 characters (including spaces) were transcribed. For the purposes of the qualitative content analysis in MaxQDA, these texts were provided with 387 memos, i.e. sometimes relatively detailed explanations and commentaries, and coded with a total of 762 different codes. Between 157 and 185 passages of text per interviewee, totaling 1,370 overall, were coded using these codes.

Each of the total of eight interviews was initially individually coded and studied to analyze its content. A rule-based, content-structured content analysis was carried out for the evaluation. In order to check and improve the category system and the coding rules, the first three interviews were each analyzed by two researchers. Different codings were discussed and arguments for a specific allocation were balanced against one another. The coders finally each agreed on a specific coding, whereby the category system and the coding rules were purposefully improved in the first three interviews. This enabled both methodical knowledge as well as understanding of the investigation object to be enhanced. The coding system developed on the basis of the first three interviews was only expanded later if completely new categories and codings came to mind. The analysis and/or coding of the remaining interviews were carried out by a researcher working alone. A second coder was called upon to assist in cases of uncertainty or difficult codings. To ensure that the results of the interviews are consistent despite the coding system which could be easily adapted and supplemented on an ongoing basis, the interviews were analyzed again with the help of the categorization system and the coding rules before and after the communicative validation process.

When discussing a dimension of IQ, the interviewees frequently mentioned one or more attributes that belong to another dimension according to the coding system. The main reason for this is that the interviewees only learned about the dimensions during the closed part of the interview and new dimensions also resulted from the data material in the qualitative content analysis. They therefore could not know that a separate dimension exists for the perceptual attribute they mentioned. Secondly, it

became clear that the understanding of concepts in theory or literature differs in certain points from that of the interviewee. A special process therefore needed to be developed for the closed interview part. If a mentioned attribute was a new attribute, it was provisionally assigned during the evaluation to the dimension in which it was mentioned by the interviewees, contrary to the coding system. If it was a known attribute which was correctly assigned elsewhere according to the coding system, a duplicate of it was prepared and this was provisionally assigned to the dimension in which it was mentioned by the interviewees. In both cases the attribute was clearly identified for further work. In the communicative validation the interviewees were confronted with the analysis and asked why they had mentioned the attribute in this particular dimension. In most cases these attributes could be assigned according to the coding system with the agreement of the interviewees. In the case of a few attributes, however, the explanation by the interviewees led to a better understanding of a dimension and to adjustments in the investigation results.

A further challenge for the analysis of the interviews are statements by interviewees which are made on different levels of abstraction. For example, the interviewees alternated during the interview between talking about concrete cues, perceptual attributes, dimensions and sometimes even higher-order abstractions and consequences of IQ. For this reason, and in order to achieve a systematic analysis, it was decided to use the means-end chain method for this too. This process enabled statements to be assigned to different levels of abstraction and to be further used accordingly. The clear definitions of the individual components of the means-end chain proved useful when delimitation was difficult. To enable the interviewees to understand the results of the study, a means-end chain was presented and explained to them in the communicative validation. So that the interviewees would not be too heavily influenced, none of the higher-order abstractions were named (in contrast to the means-end chain shown in figure 1).

The communicative validation is an essential element in quality assurance of qualitative research [13]. Consequently, a few weeks after the first interview the results of the structuring content analysis were visualized with the help of MAXMaps (MAXMaps is a component of MAXQDA) and presented to the interviewee. The aim of this process was to check the content and make any adjustments to the prepared and analyzed statements.

To permit more in-depth analysis of the closed part of the interview, i.e. the individual dimensions of IQ, a special form of communicative validation, the so-called structure-laying technique, is used [13]. It enables concepts to be structured in a form similar to the theory. A central element of it is that the interviewees carry out this structuring and graphical illustration of their statements themselves. Thus the interviewees were requested to put the IQ dimensions written on cards in three to a maximum of five groups. The aim of this process is that largely similar dimensions will be contained within the groups at the end. The interviewees also had to give each group what they felt to be a suitable name which matched the higher-order abstractions of the perceived IQ. After all interviews were completed the individual results of the structure-laying technique were compared with one another and finally with the results of the theoretical analyses.

A similar procedure was also used in earlier projects to investigate IQ. For example, in a subsidiary project of their investigations, Wang/Strong [41] asked test subjects to group and sort their identified IQ dimensions according to certain criteria. However, they called their process a sorting study because its focus was more on sorting and grouping than on the structuring and communicative validation of the dimensions.

After the analysis of the individual interviews and the adjustments from the communicative validation were completed, a summary content analysis across all the interviews was carried out using the Z rules [29]. The generalized, short paraphrases of text modules with significant content were already assigned a unique code during the content analysis (Z1 and Z2). The first and second reduction (Z3 and Z4) were carried out again by two researchers working together. The ensuing results and their interpretation are contained in the following section.

RESULTS

The qualitative content analyses finally result in 5 higher-order abstractions, 20 dimensions and 100 attributes of the IQ of websites. The attributes from the qualitative content analysis exist in the form of an implementation of the respective dimension and can be used in this form as variables and items for quantitative studies. In contrast, the attributes from the literature analysis often came from just an individual word, cannot always be clearly interpreted and are not suitable for quantitative studies. A comparative analysis on the basis of attributes is therefore not possible. Instead, the respective lists of attributes were compared analogously and searched for similarities and differences. Certain dimensions from the literature analysis contain attributes which were assigned to a new dimension during the qualitative content analysis. The analysis shows that the dimensions of the literature analysis and the empirical study correspond analogously in 15 out of the total 26 cases. Of the remaining eleven dimensions, four correspond partially (Concise presentation, Availability/Accessibility, Added value, Completeness) and two are completely different (Personalization, Security). A total of five new dimensions were added in the empirical work. For two or three (explicitly: Adequate presentation, Aesthetics; implicitly: Authenticity) there are attributes in the literature-based implementation that were assigned to other dimensions (Usability Ease of Use, Representational consistency und Traceability) in the literature analysis. The other two (Emotionality, Entertainment value) are completely independent of previous dimensions and attributes.

There are two main reasons for these differences: the first is associated with the sources on which the literature analysis is based. Even though measurement instruments were also consciously taken into account in the literature analysis for determining the IQ of websites, most measurement instruments are focused on objects other than websites. For the users of winegrowers' websites, however, other and sometimes completely new aspects of IQ are relevant. Within the dimensions that are already known, there are also other aspects in the foreground than is the case, for example, for users of (company-internal) information systems. These mainly concern the new dimensions that could only be identified in the empirical study and the two dimensions Personalization and Security (both dimensions turned out to be irrelevant in the context of winegrowers' websites). Secondly, the absolutely essential in-depth discussion to define the meaning of the individual dimensions of IQ of websites for the purposes of qualitative content analysis leads to an improved understanding of the terms and to clearer delimitation of the individual dimensions. For example, the differences in implementations in the dimensions of Concise presentation, Availability/Accessibility, Added value and Completeness can be traced primarily to improved understanding of the terms.

The following table shows the 20 dimensions and 100 attributes of IQ on the internet that were produced from the analysis. It has to be noted at this point that the study was originally conducted in Switzerland, i.e. the dimensions and their attributes were formulated in German. In order to present this study at ICIQ 2012, they have been translated into English. Yet it proves challenging to accurately account for all linguistic nuances and subtleties. It would therefore require an international study verifying the translated dimensions and attributes across different languages and countries.

Dimensions	No.	Perceptual Attributes
Timeliness	1	The information contained on the website is up-to-date.
	2	Information that may become obsolete, is updated.
	3	As soon as new information about the company or its products are known, they are published on the website.
	4	Upcoming events / activities are announced in advance.
Adequate presentation	5	The design of the website appears to be professional.
	6	The layout of the website is suitable for the presentation of the information.
	7	The information is presented in an original and surprising way.
	8	The information is presented in an appropriate and readable font (size and colors).
	9	Informative elements such as pictures, photos, etc. are of high resolution and quality.
	10	Various multimedia elements (text, image, audio, video, animation, etc.) are combined usefully.
Appropriate amount	11	The provided information is focused on the essentials.
	12	The amount of information on every single page is appropriate.
	13	The provided information is offered at a reasonable depth.
	14	The website is not overloaded.
	15	There is not too much information on the website.
	16	There is not too little information on the website.
Aesthetics	17	The design of the website is appealing.
	18	The information is presented in an appealing way.
	19	The information is presented in a visually attractive, i.e. aesthetic way.
Authenticity	20	The elements that make up a company (i.e. making it unique and distinctive) can be perceived on the website.
	21	The identity of the company is clearly visible.
	22	The website fits the company.
	23	The website reflects the company/ the personality of the producer.
	24	The unique signature of a company, that is felt on its labels, product packaging, and all other means of communication, is also visible on the website.
	25	Emotions associated with the product/company can be perceived on the website.
Usability/ ease of use	26	The use of the website works the way I'm used to.
	27	The use of the website is simple.
	28	The use of the website is consistent.
	29	The use of the website is intuitive.
	30	The keywords provided in the navigation give an overview of the content that can be expected.
	31	The information is easy to find.
	32	The menu navigation is consistent throughout the site.
	33	The navigation is clear and understandable.
	34	The navigation between different pages/content is easy.
	35	It is always clear, where you are currently located on the website.

Efficiency of search for information	36	The effort to search for information is reasonable.
	37	The information sought is found quickly.
	38	The menu helps you find the information quickly and efficiently.
	39	Frequently requested information, i.e. the most interesting information on the website is easy to find.
	40	New information is immediately apparent.
Clear interpretability	41	The meaning of the information is clear.
	42	The information contains no ambiguities.
	43	The information is unequivocal.
Concise presentation	44	The design of the various pages is uniform and consistent.
	45	The amount of fonts, sizes, and colors is appropriate.
	46	There is a common thread running through the design of the pages.
Emotionality	47	The visit of the website is a "sensory experience".
	48	The information triggers positive feelings (e.g. grace, sympathy, etc.).
	49	The information is prepared and presented with care.
	50	Emotions behind the product can be perceived.
	51	Besides the design (matching color schemes, emotional imagery, etc.) the information content is not neglected (balance of emotion and information).
Availability/ Accessibility	52	Access to information is simple.
	53	The website and thus the information offered are easy to find.
	54	The website and thus the information offered are available and accessible at any time.
	55	The web pages are displayed correctly.
	56	The navigation between different content on the website is working properly.
Accuracy	57	The information on the website is free of contradictions.
	58	The information is current, that is valid.
	59	The information is error-free, i.e. true with regards to the content.
	60	The language is correct and free of grammatical and spelling errors.
	61	Translations are accurate.
Loading speed	62	Offered contents are displayed quickly (short loading time).
	63	The time needed to display the information on the website is appropriate for me.
	64	The web pages load quickly.
Added value	65	Due to the information contained on the website I save time searching for information about a company and its products.
	66	The information provided by the website facilitates my search for information about a company and its products.
	67	The information offered is beyond my expectations.
	68	The information expands my knowledge, is new to me, and improves my level of information.
	69	The information is useful for me, help me.
	70	The website also contains information, that is of real added value to me.
Novelty	71	New information, i.e. news, can be found on the website.
	72	There are always new and useful information to find.

Relevance	73	I find the information I seek on the website.
	74	The content of the website is relevant to me.
	75	The information offered meet my information needs.
	76	The information is pertinent.
Representational consistency	77	The structure of the website is logical.
	78	There are an appropriate number of navigation levels (main category, sub-categories, sub-sub-categories, etc.).
	79	The information can be found where I expect them to be.
	80	The website is clear.
	81	The website is structured similarly to what I am familiar with.
	82	The structure supports the search for information and the users' orientation.
	83	There is a common thread running through the website.
	84	It is clear where the information sought can be found.
	85	Pages with a lot of information are well structured.
	86	Pages with similar content are built/structured in the same way.
Entertainment value	87	The information on the website contributes to the user's entertainment.
	88	The information is presented in an entertaining way.
	89	Besides the entertainment, the information content is not neglected.
Ease of understanding	90	The form of expression is appropriate.
	91	The chosen language is understandable to a broad audience.
	92	The information is easily understandable.
	93	The information is concisely formulated.
	94	Foreign words and technical terms are avoided where possible or used efficiently where inevitable (as few as possible, as many as necessary).
	95	Information that is comprehensible only for a professional audience, is provided separately from general information (e.g. technical data about the products).
	96	Translations are understandable.
Completeness	97	The information offered is complete.
	98	The information contained on the website complete the company's overall offer of information (e.g. in addition to e-mails, newsletters, brochures, pamphlets, letters, etc.).
	99	The website contains the information that I expect.
	100	No essential information is missing.

At the level of the higher-order abstractions there are scarcely any differences between the empirical and the literature-based result. Thus only the higher-order abstraction of Soft Factors was added by the interviewees. Greater differences were to be found at the dimensions level. As already described, six dimensions were deleted and five new ones added. In addition, five dimensions were moved within the higher-order abstractions: Timeliness from Contextual to Intrinsic IQ, Clear interpretability from Representational to Intrinsic IQ, Appropriate amount from Contextual to Representational IQ, Efficiency of search for information from Contextual to Representational IQ and Usability/Ease of Use from Accessibility to Representational IQ. An overview of the higher-order abstractions and their corresponding dimensions is provided in figure 2.

For the interviewees, a piece of information is not intrinsically correct if it is not up to date (timely) and cannot be clearly interpreted. These two dimensions were therefore moved to Intrinsic IQ. It may further be concluded that Representational IQ has a different meaning on the internet than in the context of

traditional information systems. For example, Usability/Ease of Use is considered by the interviewees to be an important design element of a website. It is also important that the design enables information to be searched for efficiently and prevents information overflow. Viewed in this way, Representational IQ might also be renamed "design-related" IQ in the context of the internet. The further dimensions contained in the higher-order abstraction however relate rather to the presentation of information in the narrower sense, which is why the name is not changed. The new dimensions Entertainment value, Aesthetics, Authenticity and Emotionality were assigned to the new higher-order abstraction of Soft Factors IQ.
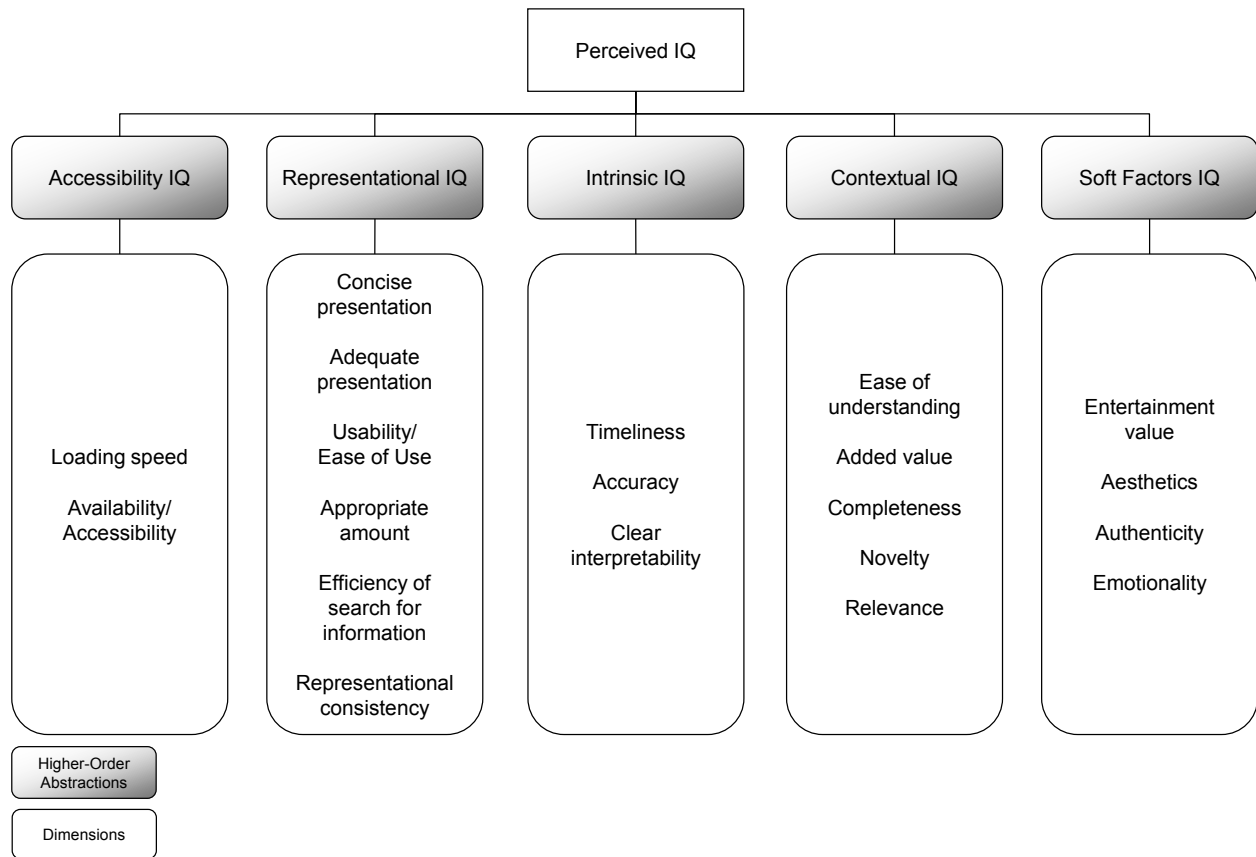

Figure 2: Higher-order abstractions and dimensions of IQ.

DISCUSSION
The implications and limitations of this work are discussed in the following two sections.

Implications
The contribution of this work for research can be evaluated from methodical, content-related (conceptual and empirical) and theoretical perspectives.

From the methodical viewpoint, a high quality was achieved for the qualitative-explorative research project and its results through the consistent orientation to qualitative effectiveness criteria. The

methodical basis proved to be an essential support for the complex analyses, and especially during difficult phases of the research project. Future researchers can use this basis as the starting point for their own projects.

From the content-related viewpoint, the basis for what is – from an academic and practical perspective – a complex and interesting phenomenon, was created systematically and methodically.

Thus all previously found measurement instruments and empirical studies in the field of perceived IQ on the internet were assembled in the first instance. This, according to the results of the literature analysis, constitutes the most extensive inventory of research work in German and English on the subject to date. The previous research studies for measuring perceived IQ on the internet using a methodical basis were then consolidated and structured. Only a few of the previous studies and compilations of measurements demonstrate a clear methodical basis. Even rarer in previous works is the use of self-developed empirical findings. A few even assemble their criteria in an ad-hoc way and on an intuitive basis. Using the means-end chain method, all of these aspects of perceived IQ found in the literature search were analyzed methodically and were checked and supplemented by means of own empirical investigations, in which concrete cues, perceptual attributes, dimensions and higher-order abstractions of perceived IQ were determined and systematized.

In addition to the methodical and content-related findings described, in the theoretical context the paper also contributes to the permeation of the phenomenon of IQ on the internet. As already mentioned above, previous studies sometimes lacked any clear reference to existing literature, methodology or theory.

Limitations

The results obtained essentially document the "current state of error" of the authors of this work. This statement incorporates two core elements. Firstly, the entire process of the qualitative-explorative research was oriented toward qualitative effectiveness criteria. The work therefore endeavored to capture the phenomenon under investigation as objectively as possible. Nevertheless, it is possible – indeed even probable – that certain aspects were overlooked or overestimated because of the subjective perspectives and due to knowledge that was lacking or already available. Secondly, the findings and the measurement instrument reflect only a snapshot, and so it is possible that the measurement instrument will be developed further and revised in future investigations.

A further restriction results from the fact that empirical analyses carried out during the study are limited only to the Swiss wine industry. It is clear that the results cannot be generalized without further investigations. For generalization to be possible, the analyses would need to be wider – i.e. carried out in different sectors, countries, and languages.

Last but not least, the measurement instrument lacks a quantitative test with which it may be further tested and thereby improved.

CONCLUSION AND FURTHER RESEARCH

As explained above, the measurement instrument is now being further developed and refined by means of quantitative studies. This will enable, for example, the attributes, dimensions and higher-order abstractions of perceived IQ to be tested. It would also make sense to reduce the number of attributes (and possibly also dimensions and higher-order abstractions) using suitable methods, in order to facilitate practical and pragmatic analyses.

Furthermore, it will be fascinating to investigate the consequences of perceived IQ on the internet. Reference is also made for this purpose to eleven of the 25 previous studies, which have already carried out quantitative empirical investigations.

In this sense, this paper can be used as the basis for further research projects and publications on the phenomenon of IQ on the internet, the significance of which – owing to the increasing importance of the online channel – will continue to grow still further in the future.

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