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THE NEW MULTICRITERIA-BASED MODEL FOR QUALITY ASSESSMENT OF WRITTEN MEDIA MESSAGES - PERSPECTIVES FOR APPLICATION

Abstract: *Media messages are any form of communication delivered to the audience, broadcasted in written, oral or visual form. They may include TV shows, web pages, advertisements, news stories, blogs or social media posts, inter alia. At present, facts are no longer the paradigm of journalism. They are often replaced by short messages constructed on the basis of biased or emotional content. In addition, commercial value of news and digitization of resources have also changed the formation of texts and images. They are built using entries posted on Facebook or Twitter (often by fake accounts), instead of face-to-face interviews, participant observation, or citing primary sources and opinions. On the other hand, there are numerous discussions on the quality of data and information, also in the context of journalism. Although there is no agreement whatsoever as to the factors contributing to high-quality communication, the author attempts to demonstrate a new model for quality assessment of written media messages. It comprises four main groups of quality factors, namely: 1) information, 2) linguistic, 3) publishing, and 4) useability. Each group consists of specific criteria, which are analyzed with respect to different media content. Its potential of application for quality assessment of press and social media will be discussed.*

Keywords: *media messages, quality assessment, quality of journalism, multicriteria model*

1. Introduction

The contemporary world is characterized by a wide variety of messages and their providers (senders). Paradoxically, the phenomenon of online loneliness is observed in the information noise, and social media often create isolating media bubbles. On the other hand, in the practice of large newsrooms, perfectly optimized content is displayed by a large number of users. "Reach" journalists, or rather "media workers", can guess the audience's needs on

their own, or being supported by artificial intelligence (AI), i.e. they can anticipate their enthusiasm or irritation. This process has intensified in the last decade.

AI, which is used more and more commonly in the news making process, does not protect the originality of opinions and the truthfulness of information. The most important thing is the clickability of the material. Click-through rate is a big nuisance for many contemporary journalists, which makes it necessary to prepare the material in advance, with the content of keywords best

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targeted at the tastes of the target audience, and most often omitting issues such as reliability, non-conformity, and sometimes even human dignity. Many observers believe that with further intensification of this process, tools such as ChatGPT will soon displace people from the creative process in the media. Click-through rate as a criterion will become the most important factor in evaluating the communication processes.

Therefore, the selection of information and opinions becomes a serious problem, not because of the “loudness” of the title and the emotions it evokes, but because of their internal quality: consistency, reliability, originality, journalistic sovereignty of thinking, social commitment, concern for the common goodness, creative attitude towards the work performed, etc. That is why this paper is looking for a multi-criteria measure of journalistic quality, a method that will indicate content that is worth following and then recommending to the audience both in real life and online. Although the dependence on intelligent technologies in communication is huge nowadays, it is necessary to reflect on the quality of journalism, and not only on the perfectly optimized and “clickable” content.

In the literature, a lot of space has been devoted to research on the quality of journalistic messages. As quality is a multidimensional concept, these are usually interdisciplinary projects, covering areas such as quantitative and qualitative content analysis, linguistics, multi-criteria analysis, data mining and many others (Raś, 2023). The aim of this research is to demonstrate a new model for assessing the quality of press articles and the possibilities of its application to different types of press materials.

2. State-of-the-art knowledge on the quality of media messages

The literature on the quality assessment of media messages can be categorized in two main groups. First of them refers to the

factors revolving around “quality journalism”, which is defined as “journalistic excellence” and described by values such as i.a. truth/facticity, 2) relevance/context, and 3) independence. However, these factors are multidimensional; for example, truth/facticity consists of diversity, transparency, interactivity and clarity of language and style (Meier, 2019).

The second group of research papers refers to content quality assessment (CQA) based on the pre-established criteria. For example, Chai *et al.* (2010) provides a CQA framework for social media. It consists of Information Quality (IQ) dimensions which comprise factors such as i.a. *user feedback, amount of data, reputation, objectivity, relevancy, reliability, completeness, accuracy, timeliness, understandability, value-added, consistency, security and accessibility.*

Similar criteria may be also found in other, non-media contexts such as data quality assessment and the meaning of quality for data consumers. One of the first research attempts in this area was undertaken by Wang and Guarascio (1991), who identified 20 data quality attributes. This model was elaborated in the subsequent publications by Wand and Wang (1996) and Wand and Strong (2015), *inter alia*. The quality attributes distinguished by this group of researchers have been selectively used in studies related to the quality of databases and information systems.

According to Batini *et al.* (2009), they provided several important classifications of data quality criteria, allowing to distinguish a set of four key attributes most commonly described in the literature. They include: *accuracy, completeness, consistency, and timeliness.* Other studies such as the report by DAMA (2003) described six criteria for assessing the quality of information in databases, calling them *basic* (primary). In addition to the four above, they distinguished *uniqueness* and *validity*. Additional features mentioned in this report include usability,

flexibility, trust in data and data value. Sidi *et al.* (2012) additionally distinguished, on the basis of the literature review, over 20 additional data quality dimensions, including *accessibility, availability, security, effectiveness, efficiency, reliability, objectivity* and *ease of use*. The literature does not provide a universal set of data quality dimensions. Multiple discrepancies in types and definitions of the quality characteristics are due to the contextual nature of data quality.

As regards the quality criteria (QC) of written media messages specifically, little research has been done in this area. Pulikowski (2007) developed a framework for assessing Internet documents, which consists of two fundamental criteria: *usability* and *reliability*. The usability criterion is explained by *content* and *timeliness*, while reliability - by *authorship, goals, objectivity (impartiality)* and *correctness*. Although it can be useful in assessing some media messages, this model is insufficient to assess press releases, especially coming from the newspapers.

Comparing the quality of messages with a homogeneous thematic context, especially in the context of the press or Internet content, becomes necessary considering the contemporary tools, such as AI, supporting (or replacing sometimes) journalistic work. It seems necessary to verify such “artificial” outcomes. In response to this research gap, the study was conducted to develop a new, versatile, multicriteria-based framework for assessment of written media messages published in printed and online form.

3. Model and methodology

3.1. Building the model

The new model has been developed based on the thorough review of literature and preliminary tests on newspaper articles dated from 1865 to 2023. It has a hierarchical structure consisting of four fundamental

quality dimensions: *Information, Linguistic, Publishing* and *Useability* (Figure 1).

Informational quality consists of seven criteria: *timeliness, accuracy, reliability, credibility, consistency, uniqueness, and completeness*. *Timeliness* refers to the question whether the press material appeared at the time of the event or contains information current as of the date of its publication. *Accuracy* indicates that content of the material contains details showing or describing the actual state of the event in question. *Reliability* means that the information in the press release is supported by appropriate and properly cited sources of information, either from a clearly identified and cited source or from a witness. *Credibility* indicates that the information comes from a reliable source and/or author. *Consistency* shows whether the press material is internally consistent and does not contain contradictory information. As regards *uniqueness*, it refers to unnecessary duplication of information inside a given material and/or across other press messages released at the same time. Finally, *completeness* is to measure whether the material properly explores a given topic in relation to the press genre it represents.

Linguistic quality comprises three criteria: *concise, readability and beauty of the language*. *Concise* means that the press material contains the right amount of information in relation to the genre it represents and the topic addressed. It refers to the so-called economy of the message, or its appropriate level of condensation. *Readability* defines the correctness in terms of language and style, lack of different errors, and the proper organization of the content. *Beauty of the language* reflects the aesthetics of the text, which can be the source of so-called “aesthetic pleasure” for the reader.

Publishing quality consists of three characteristics: *objectivity, relevance and attractiveness*. *Objectivity* is a multidimensional criterion, indicating that

the material clearly separates facts from opinions and its content is balanced. Based on its reading, it is impossible to notice any likes, worldviews and/or interests of the author. *Relevance* shows the matching of the content and headline to the press genre and nature of the event. *Attractiveness* means that the material (its content, title and lead) attracts the recipient's attention and makes them want to read it.

Useability is the quality dimension consisting of two features: *usefulness* and *availability*. *Usefulness* indicates that the material contains information useful in some way to the recipient and/or sender and their decision-making processes. *Availability* shows the easiness of the material to obtain, retrieve and analyze.

3.2. Deriving weights using PC method

The application of the above model in assessment of media messages requires prioritization of QC. There are numerous multicriteria-based methods used to derive weights and produce relevant ranking of alternatives. One of them is the analytic hierarchy process, a PC-based (pairwise

comparison) tool which allows analysis of complex hierarchical structures (eg. Kułakowski, 2020). This method starts from building a hierarchical model (as shown in **Figure 1**), which is divided into groups of parent-children criteria, and analyzed using a 9-point, fundamental scale enabling comparison of two alternatives at a time. Assuming two elements being compared, *A* and *B*, the respondent has the following possibilities:

- A and B are equally important (value of intensity: *I*),
- A is of *moderate* importance over B (or: B over A) (**3**),
- A is of *strong* importance over B (or: B over A) (**5**),
- A is of *very strong (essential)* importance over B (or: B over A) (**7**),
- A is of *absolute (extreme)* importance over B (or: B over A) (**9**),
- intermediate values (**2, 4, 6, 8**) used if dominance of one alternative over another fits in somewhere between scale degrees of 1, 3, 5, 7 and 9.

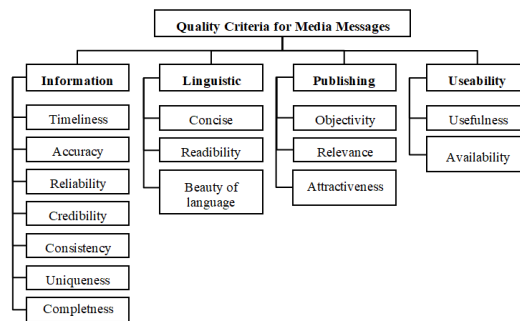


Figure 1. QAC for media messages

Results of the comparisons are introduced into the *PC* matrix, which is always a square matrix with “1” in diagonal (an element compared with itself has always “the same importance”). All the entries above the main diagonal are the reciprocals of the entries below the diagonal (**Table 1**).

Table 1. Example of *PC* matrix

	A	B	C	D
A	1	3	1/3	7
B	3	1	8	5
C	1/3	1/8	1	3
D	1/7	1/5	1/3	1

The *PC* matrix allows us to derive the ranking vector of priorities (weights), which sums up to one:

$$w = [w_1, w_2, w_3, \dots, w_n]$$

The analysis can be performed using a number of prioritization procedures, such as eigenvector (*EV*), geometric mean (*GM*) or arithmetic mean (*AM*) method (Prusak 2017). In addition, each *PC* matrix should be tested for consistency based on the following formula:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

where *CI* is *Consistency Index*, λ_{max} is the largest eigenvalue of the matrix, and *n* is the number of alternatives in a group being compared against each other. The final *Consistency Ratio* (*CR*) is calculated by dividing *CI* by the so-called *random index* (*RI*):

$$CR = \frac{CI}{RI}$$

where *RI* is a fixed, tabulated value for $n = 3, \dots, 15$. For example, for $n=4, RI=0,86$. A matrix is consistent for $CR < 0,10$, otherwise it is inconsistent and the judgments should be modified or repeated (eg. Vargas 2008).

For consistent results one can calculate the so-called *global priorities*. In multi-level hierarchies, global values are calculated as multiplication of weights of the main (parent) criteria and their (children) subcriteria. Additionally, if *PCs* are made by a group of respondents, the priorities (weights) derived for each of them can be aggregated into a common vector (Prusak & Stefanów 2014).

4. Results and discussion

As the AHP is an expert method (experts are individuals whose opinions can be used for final recommendations), three experts (two academic and one practitioner) in the area of journalism and media research were selected to evaluate the hierarchical model. The results were aggregated using a geometric

mean method and presented as a percentage values in Table 2 and Table 3.

Table 2. Priorities for quality domains

Domain	Priority
Informational	0,3501 (35,01%)
Linguistic	0,1373 (13,73%)
Publishing	0,2298 (22,98%)
Useability	0,2827 (28,27%)

Table 3. Priorities for quality criteria (QC)

QC	Local	Global
Timeliness	0,0764	3,39%
Accuracy	0,2511	10,31%
Reliability	0,1941	5,49%
Credibility	0,2778	9,83%
Consistency	0,0742	2,19%
Uniqueness	0,0619	2,03%
Completeness	0,0645	1,76%
Concise	0,3515	4,52%
Readability	0,4675	7,24%
Beauty of language	0,1810	1,97%
Objectivity	0,7117	15,70%
Relevance	0,1777	4,24%
Attractiveness	0,1105	3,05%
Usefulness	0,7806	23,38%
Availability	0,2194	4,89%

The analysis shows that the matrices were highly consistent for all the experts, with *CR* ranging from 0,00 to 0,09. In one case $CR=0,20$, but after additional considerations it was accepted for further analysis as the inconsistency was at tolerable level (Wedley 1993). The priorities derived for quality domains clearly indicate that *Information* is the most important feature in quality assessment of media messages ($w=35,01\%$), followed by *Useability* ($w=28,27\%$). Within the domain of *Informational quality*, the most important *QC* is *credibility* ($w=27,78\%$), and within the *Linguistic* domain, *readability* received the highest priority value ($w=46,75\%$). As regards global *QC* ranking, *usefulness* and *objectivity* contribute the most to the quality analysis of media messages with priority values of 23,38% and 15,70%, respectively.

It was followed by *accuracy* ($w=10,31\%$) and almost equally significant *credibility* ($w=9,83\%$). Such results can be explained by the common attitude towards practicality, usefulness, usability and information accuracy (which sums up to 38.58%). News regarding the daily weather forecast supports the recipient in choosing appropriate clothes. The media shows the public debates and periodically supports electoral decisions at various levels of government, and provides economic information which supports customers in their decisions on a daily basis. It is also not surprising that the desired attitude towards objectivity and credibility of messages is observed (25.53% in total), which in everyday life is associated with authenticity and truthfulness, most often with regard to the collected information and its impartial representation. The key element here is a credible source of information, on the basis of which a multilateral or multifaceted opinion on a given topic is provided. Nowadays, access to the possibilities of creating information is almost unlimited, and some of it can simply be written with the use of “poisoned sources”. Therefore, in qualitative analyzes these four aspects of the assessment are strongly emphasized, which together account for almost 2/3 of the importance (64.11%) of written journalistic texts.

5. Conclusions and implications

The objective of the current research was to develop and demonstrate the analysis of a

new, multicriteria-based framework for assessment of written media messages published in printed and online form. The model can be further employed to assess a number of press materials. As it would be difficult to use AHP for such an analysis (due to a limited number of PCs that can be performed effectively), each criterion can be operationalised using e.g. five questions for “yes” or “no” answers. It would allow using another multicriteria analysis (i.e. TOPSIS) to objectively rank the selected materials according to their quality.

New tools supporting the work of the media, such as ChatGPT, will probably gain more and more importance due to the generated click-through rate and usefulness of their materials. However, the increase in the number of press releases generated by AI benefits primarily online aggregators and large technology platforms that have access to a wide range of information consumers. Such a complicated and rapidly changing world of written media messages needs deep quality-related narratives that will explain this complexity.

The research on the quality of written messages offers a protection tool, under which publicists and journalists will still be able to reveal the secrets of people in power, politics, economy, judiciary, public administration, in the name of independence and journalistic quality. Click-through rate, however, cannot become the only or the most important criterion for evaluating information and opinion-forming messages.

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