**Building trust in official statistics, ethos, pathos and logos in a blog**

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**Abstract**

*Evolving from only disseminating official statistics through reports, then in the last decades, also disseminating through databases and for some years disseminating also through social media. Social media provide possibilities of highlighting and explaining statistics and building the ethos of national statistical institutions (NSI:s) for new groups of users. At the same time, texts in social media have a tendency to be oversimplified and overstated. Databases on the other hand gives freedom for users to create their own tables but can be difficult to use for inexperienced users. I.e. new ways of disseminating statistics place new demands on the NSI:s.*

*In this article, rhetorical theory is used to analyse how the aim of making the statistics available for users and building trust in the statistics is met. According to rhetorical theory ethos, pathos and logos are essential for building trust and the article therefore discusses how ethos, pathos and logos might be affected by the choice of channel for communicating official statistics. The case of how the Swedish Board of Agriculture, the organisation responsible for official agricultural statistics in Sweden, uses different channels is chosen. The information given on the website that includes a blog, a traditional statistical report, a database and quality-declarations are discussed.*

*The findings show that the different ways of disseminating statistics focus on different aspects. There is a focus on logos in the quality declarations published together with the database and the reports while the blogposts to a larger degree focus on pathos. It is also clear that different ways of disseminating statistics target different users. All channels build ethos both for the NSI and for the overall statistical system.*

**Keywords:** ethos, logos, pathos, dissemination

**1. Introduction**

In 2011 the Swedish Board of Agriculture started to blog diagrams and text summarising small portions of official statistics. The blog was an attempt to address several problems. Mainly that, according to a user study, inexperienced users had problems finding statistics and understand how it could be used. Also when sudden needs to explain incidents with statistics occurred it was difficult to find appropriate channels to disseminate and explain the relevant statistics.

Very soon it was found that the format of a blog was a suitable way to address the problems and explain specific statistics in a focused way. Therefore the blog still exists and it is a viewed by the public as well as by journalists and students.

In the blog figures are shown by diagrams and the quality of the statistics is explained in the text. Still there is a concern that the quality of the statistics is not well enough explained and that it could be questioned if the blog builds trust in statistics. The article discusses this concerns and finds that the blog improves several quality components, especially relevance and accessibility. However, the study also shows that accuracy could be better explained.

The use of social media as additional channels for communicating official statistics is increasing. Agerdal-Hjemind & Valentini (2015) highlight advantages of social media such as the fact that social media are inexpensive, fast and enable direct and interactive communication with the public. Being able to use a new format while following the organisation’s information policy is mentioned as a challenge together with issues of privacy and security. Their own study from governmental agencies in Denmark show that the agencies’ purpose with blogging was to be visible and viewed as experts in the subject field, but that interaction with the public was less common than expected. Macnamara & Zerfass (2012) show that social media are often used in an ad-hoc way and are less incorporated in the media policy of the organisation. They therefore advocate a balance between the goals of openness and diversity and the need to represent the interest of the organisation.

Social media thus provide possibilities of highlighting and explaining statistics and building trust in new groups of users but may also entail disadvantages regarding the communication of statistics. Even though social media such as Twitter and Instagram are becoming more and more common, this article will focus on the use of blogs.

*1.1 Aim and method*

The aim of the paper is to discuss how the prerequisites of a blog compares with the different prerequisites of a statistical report or of a database regarding the possibilities to communicate statistics and describe its quality. Blogposts, database tables and traditional statistical PDF-publications on agricultural statistics, especially food consumption, for two years 2017 and 2018 will be compared.

**2. Dissemination of agricultural statistics**

According to the Swedish Official Statistics Act (2001:100), official statistics must be made available in the society for general information, investigations, studies and research. The statistics are to be objective and made available to all users at a publicly set time. The Board complies with the demands of the law by using the statistical reports as the official way of disseminating statistics. The report has a format containing a summary, explanations in the form of text and diagrams, tables and a section about the most important facts required to understand the quality of the statistics. Agricultural statistics is made available in a specific part of the website of the board.[[1]](#footnote-1) Table 1 shows that during 2018, 149 reports with a total of 460 tables where published. Prices and animal production are published monthly, which explains the large number of tables in those areas. During the period 2015-2017 an average of 495 tables were published. The larger number is explained by the census performed in 2016 that created a large number of tables especially in the area of structural statistics.

At the same time as the statistical report is published, tables are uploaded to the database. The database contains a portion of the content of the reports, mainly figures suited for comparisons over time. For several areas like crops, yields, animals and holdings, comparable statistics is available on NUTS3 level since the 1960: s. In the database there are footnotes explaining the quality of the statistics.

As shown in Table 1 there are 166 tables in the database and a total of 31 700 downloads have been made in 2018. The number of tables has increased compared to the previous 3-year period the reason being that there is a policy to present more and more statistics in the database. However, the number of downloads is the same. The most popular areas are farm structure and prices.

Both the report and the tables of the database are marked with the Swedish logotype of official statistics. The report and the database are published together with a declaration of quality in a format decided by Statistics Sweden (the NSI) The declaration follows Regulation (EC) No 223/2009 art. 10 on European statistics of 11 March 2009. The headlines of the quality declaration include the components given in article 10 as well as administrative information about the statistics. The report is published at the same webpage as the report and the database links to the declaration. A description of the production process is also published together with the declaration of quality. The format of the description of the production process follows a format used by statistics Sweden.

**Table 1. A comparison between the blog, the statistical reports and the database 2018**

|  |  |  |  |
| --- | --- | --- | --- |
| **Area of content** | **Nr of** | **Blogposts1** | **Nr of database tables** |
|  | **report tables** | **Nr of posts** | **Nr of added area** | **Nr of clics2** | **Pub-lished** | **Down-loads** |
| Statistics not pub-lished at the Board | . | 48 | (45) | 71 725 | . | . |
| Farm structure | 55 | 20 | (15) | 69 913 | 51 | 13 256 |
| Agr. production | 84 | 33 | (12) | 24 444 | 11 | 4 720 |
| Organic farming | 30 | 9 | (8) | 9 344 | 8 | 1154 |
| Prices | 134 | 9 | (5) | 41 599 | 40 | 6 144 |
| Farm economics | 56 | 6 | (2) | 5 434 | 41 | 943 |
| Aquaculture | 2 | 2 | (-) | 196 | - | - |
| Horticulture | 68 | 16 | (1) | 11 178 | 6 | 751 |
| Consumption | 31 | 5 | (2) | 20 500 | 9 | 4 761 |
| *Summary 2018* | *460* | *148* | *(90)* | *254 333* | *166* | *31 729* |
| *Average 2015-2017* | *495* | *137* | *..* | *212 000* | *135* | *30 004* |

1. The number of blogposts that combine two or more areas are given in parentheses,
2. The clicked on the homepage are divided in proportion to the number of blogposts in each area.

Agerdal-Hjemind and Valentini (2015) argue that the organisational choice to use social media in general are driven by the public’s information searching habits rather than an interest from the organisation in social media as such. That was also the case for the Board of Agriculture. In 2009-2010 it was seen as a problem that inexperienced users had difficulties finding statistics they were searching for, despite attempts to tag published statistics. Furthermore, through a performed user study it was concluded that when a sudden need for specific statistics raised, it was difficult to find appropriate channels to spread and explain relevant statistics. Several social media were tested and besides the blog, Wikipedia, Facebook and Twitter were also tested with the purpose of helping inexperienced users finding the statistics and highlighting interesting figures.

The blog jordbruketisiffror.wordpress.com started in 2011 and was the social media that survived, mainly because it attracted the largest number of users. The longer format of a blog compared with Twitter and Facebook was also considered best suited to fulfil the aim of helping users find and understand statistics. The Board has a social media policy stating for example that blogs should be easy to read and that the sender of the messages is the Board, not the blogger. In the blog, the quality of the statistics is explained in the text, along with the diagrams.

Table 1 shows that during 2018 as well as during the period of 2015-2017, an average of 2-3 blogposts per week or 130-150 blogposts per year have been published. The total number of viewed pages was 252 000 in 2018 and an average of 212 000 during the previous period. The number of clicks have increased each year since the blog started in 2011.

Table 2 compares how the number of blogposts, clicks and downloads differ depending on the content in the period 2015-2017 and the year 2018. In 2015-2017 about 38 % of the blogposts contained statistics relevant to farm structure. In 2018 the share was only 14 %. This was due to the fact that new statistics on farm structure was published in 2017. In 2018 on the other hand there was a drought during the summer which meant that the blog focused on crop production statistics where long time series where shown and the low yields 1866/67, 1916/1917, 1941/42, 1992 where described.[[2]](#footnote-2) However, the shift in the content of the blogposts did not the change the share of clicks. The share of clicks where still higher for farm structure.

9 % of the post an average in 2015-2017 and 32 % of the posts 2018 contained statistics relevant to the agricultural area but not published by the Board. The increase in 2018 was due to the fact that Eurostat had started to publish the result of the farm census in 2016 and in December “a calendar” where published where one EU-member state was highlighted each day. Other examples of mixed blogposts where consumer prices and import and export statistics. However, in most of the posts, the blog combined external statistics with statistics produced at the Board. It is also common in the blogposts that several areas are combined, for example a comparison of production and consumption of different kinds of meat.

T**able 2. A comparison between the 3-year period 2015-2017 and 2018**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Area of content** | **Share of blogposts** | **Chare of clics** |  | **Share of reports** | **Share of downloads** |
| **2018** | **2015-2017** | **2018** | **2015-2017** |  | **2018** | **2015-2017** | **2018** | **2015-2017** |
| Statistics not pub-lished at the Board | 32% | 9% | 28% | 17% |  |  | - |  | - |
| Farm structure | 14% | 38% | 27% | 25% |  | 12% | 22% | 42% | 38% |
| Agr. production | 22% | 18% | 10% | 14% |  | 18% | 18% | 15% | 16% |
| Organic farming | 7% | 8% | 4% | 4% |  | 7% | 6% | 4% | 6% |
| Prices | 6% | 7% | 16% | 20% |  | 29% | 29% | 19% | 21% |
| Farm economics | 4% | 5% | 2% | 1% |  | 12% | 12% | 3% | 3% |
| Aquaculture | 1% | 1% | 0% | 0% |  | 0% | 0% | 0% | 0% |
| Horticulture | 11% | 9% | 4% | 3% |  | 15% | 5% | 2% | 3% |
| Consumption | 2% | 5% | 8% | 16% |  | 7% | 7% | 15% | 13% |
| *Summary* | *100%* | *100%* | *100%* | *100%* |  | *100%* | *100%* | *100%* | *100%* |

The share of downloaded tables in the area of farm-structure increased in 2018, while the interest for downloading agricultural production decreased.

**3. Rhetorical theory as a framework for analysing quality**

Aristotle defines rhetoric as “the faculty of discovering in any particular case all of the available means of persuasion". Rhetoric can thus be described as using language as effectively as possible to reach a communicative goal in a specific situation.

Within rhetorical theory, Lloyd F. Bitzer (1968) developed the concept of “the rhetorical situation” in a well-cited article with the same name. He argued that a rhetorical situation arises if there is a problem, something that requires a change, and that this change can be brought about by influencing the audience. Bitzer argues that a rhetorical situation consists of three elements: a pressing problem (exigence), an audience, and constraints.

The theory has been criticised mainly from an epistemological point of view for being too deterministic compared with for example the view that the problem is something all participants in the situation interpret and shape (Vatz, 1973, Biesecker, 1989). The concept of the rhetorical situation, however, does provide a framework for discussing different requisites regarding different ways of communicating and will be used to discuss how quality is communicated in official statistics.

**3.1. The pressing problem (exigence)**

Bitzer (1968) defines the pressing problem as "something that is not as it should be". In the case of disseminating agricultural statistics, the overall problem is to fulfil the main purpose of official statistics to make it available. Hence, it is a pressing problem that the users might not know that the statistics exists or have the knowledge or skill to use it for their needs. In order for the users to trust the statistics, it is also important that the users trust the organisation responsible for the statistics. Consequently, it can be seen as an ongoing problem to maintain this trust. The problem is, at least at this level, considered to be the same for the blog, the reports and the database.

In some types of situations, where the pressing problem requires a prompt response, the blog provides an opportunity to comment on statistics where the other channels do not. There are several examples of the blog being used as a reference when many journalists seek information in relation to some issue gaining public interest. One such example is the “horse meat crisis” in 2013, when the amount of slaughtered horses became extra interesting to the public.[[3]](#footnote-3) Another example is the peak in public interest in the consumption of red meat and meat imports from Brazil.[[4]](#footnote-4) In 2018 the blog was used in this way to describe changes in the yield.[[5]](#footnote-5) However, this did not meet a user need since the users did not respond to the increased number of blogposts about yield by increasing the share of clicking on animal production.

**3.2 Audience**

The audience as defined by Bitzer (1968) is a group that the rhetorician wants to influence to do something. The audience is rarely homogenous, as is pointed out by for example Palmer & Mazali-Lurati (2016). Instead, the audience consists of several sub-groups with different values and knowledge that the rhetorician needs to address.

Even though the pressing problem is considered to be the same for all channels, the audience is not. The audience of the database, for example, is assumed by the Board to have knowledge of how to work with statistics and an understanding of how to put together figures into tables. The database users are assumed to be capable of finding the quality declaration via the link to obtain the information they might need from it. The audience of the reports receive more help in that they are provided with completed tables and text describing the content of the tables. In the blog, only small fractions of statistics are presented as diagrams, very seldom in numbers but there are explanatory text is written in a conversational style. I.e. the different channels, including the blog, give the Board the opportunity to address different audiences in different ways. Not only the skills and experience of the users, but also their information needs are met differently through the different communication channels. The database assumes a need of long time series of basic data, the reports a need to find information about a single subject area at the time, while the blog to a larger extent combines areas but gives mere glimpses of content in each post.

Subgroups of users of agricultural statistics found in user-studies are for example different kinds of journalists, people who are looking for a specific figure such as the number of cows or the consumption of milk, NGO: s and governmental organisations. Direct contacts with users of statistics have also shown that experienced users use the blog as well, while it is less common that inexperienced users try to use the database.

**Constraints**

Bitzer (1968) writes about two groups of constraints: artistic and non-artistic constraints. The non-artistic constraints are formal, like objects and relations. The artistic constraints are ethos, (the rhetorician’s wisdom, virtue and goodwill) logos, (the arguing and reasoning) and pathos (the emotions the rhetorician wants to convey are important for solving/dealing with the pressing problem).

The format can be viewed as a non-artistic constraint. In the statistical reports and the database, the content and the time of publication are decided beforehand and the format is strict. This is an advantage, as the users know when statistics will be published and know beforehand where in the report information needed can be found. The content of the blogposts is not predetermined. The blogpost can also contain information that is not produced by the Board, for example making comparisons between Sweden and other countries using Eurostat and FAO statistics. During the studied 3-year period, 15 percent of the blogposts are international comparisons.

The blog has a more personal tone than the statistical reports and each blogpost is signed with a name. In the blogposts there are personal notes such as: “I saw on TV that arable land is decreasing, which made me curious of what I can find in our database”. “It is so cool to be able to study a 100 year long time series.” The approach is more conversational and there are also subjects, like a comparison of the most popular names of dogs and people, which could be seen as trite.

In relation to the pressing problem, pathos in this case could be described as the users finding the statistics reliable and comprehend the content and its impact on the use they have in mind for the statistics. In the blog, the users are addressed through a more personal voice, discussing and highlighting the statistics and the idea is that all relevant information for understanding and using the data should be given in the text. The goal is that the user feels safe using the figures. In this case, logos is connected to pathos given that the explanatory text must be coherent and have a logical flow.

So does blogging build trust, build ethos? Mckenzie and Özler (2014) show that a World bank blog made the results from the banks’ research more known, but also influenced the attitudes towards the bank in a favourable way and led to more downloads of the research. They also saw that recognition of a blogger led to more trust in the research. Thus, the more personalised tone in the blog could lead to more trust in both the statistics and the organisations. However, there are also dangers, for example blogposts are written more hastily and they are often not scrutinised in the same way as the reports which means that errors are more likely to occur. Furthermore, the tone could be seen as subjective and the choice of fields of statistics to highlight might lead to concerns about objectivity.

In consumption statistics the concept of “total consumption per capita” is used by the Board. This is the same definition as for example also FAO uses. The quantities of meat are given as slaughter weight. In the official Swedish statistics the concept of “direct consumption” is also used, meaning the quantities as you would buy them from the store. These definitions of consumptions have on several occasions been confusing for users who interpret them as “quantity on the fork” i.e. the amount you actually eat.

On several occasions when consumption has been discussed publicly, the blog has been used to explain the concepts. Furthermore, in blogposts about consumption, the definitions can be explained in conjunction with the statistics.[[6]](#footnote-6)

**4. Rhetorical strategies regarding quality components**

The quality components defined in Regulation (EC) No 223/2009 art. 10 on European statistics of 11 March 2009 will be discussed in relation to the way statistics are disseminated in a blog.

*Relevance refers to whether the statistics meet the users’ needs.* In relation to the blog, several examples have been given where the content of the blog provides a background to a specific question discussed, as in the example of the Brazilian meat or the number of horses slaughtered. There are also examples when the blog summarises content that especially the newspapers want to find in relation to specific seasons, like strawberries and potatoes in the summer or sweets and lamb for Easter. It could also be observed that dairy related blogposts where more clicked during the milk crisis of 2016. The phone calls from users wanting to know more about land rent prices also indicate that they have found the statistics through google searches that directed them to the blog rather than to our statistical reports. I.e. the tagging of the blog is effective. The blog thus provides possibilities of achieving relevance in situations where the statistical databases and statistical reports cannot.

*Timeliness* could be viewed as how fast the blog provides statistics for an area discussed in the news. Except for seasonal statistics, the blog responds to detected needs rather than predicts them. The response, however, is usually prompt.

*Accuracy refers to the closeness of estimates to unknown true values.* Regarding accuracy, little is said in the blog. In the statistical reports and databases, standard error is shown in the tables and in the text it is often explained whether values constitute statistically significant changes or not. In the blog, however, the problem of accuracy seems to be solved by not writing about statistics with large standard errors. Standard errors are only mentioned in three blogposts during the studied period, once in relation to land rent prices[[7]](#footnote-7) once in relation to the changes of number of sheep on NUTS3 level[[8]](#footnote-8) and once in relation to yields.[[9]](#footnote-9) A comparison between the tables in the statistical reports showing standard errors and the blogposts, shows that most of those tables are not used in the blog.

In some cases, such as crop yield statistics, standard errors are not mentioned. However, with the statistics about consumption the definitions are thoroughly described in the text, which makes it easier to comprehend the accuracy of the values provided.

Regarding *Accessibility and Clarity,* the blog provides a third option besides the report and the database to access the statistics. Since each blogpost highlights one small portion of the statistics, it will provide good accessibility if this is the statistics you want. However, it could also be that writing about the statistics in small segments and sometimes with inventive comparisons might make the results more difficult to understand than the more straightforward presentation in the statistical reports and databases.

Regarding the components of *Comparability* as well as *Coherence,* the blog shows what could be done through examples such as the agricultural land compared with the total land area.

1. **Conclusion and discussion**

Several advantages of the blog as a complement to statistical reports and databases regarding the goal to make agricultural statistics easily available in contexts where it is needed has been discussed in the article.

The article shows that the blog Jordbruketisiffror.wordpress.com is used to improve several quality components, especially relevance and accessibility. However, the study also shows that accuracy could be addressed further.

The quality components build trust and to summarise factors that build trust in the blog, compared to the other ways of presenting statistics, some examples are a more personalised voice, possibilities to explain quality in relation to a specific figure and at the same time show examples of how it can be used. It is also a channel where it is possible to promptly and informally correct common misunderstandings of how the statistics can be used.

The blogposts show a fraction of the statistics which means that the portion used can question objectivity. At the Board less procedures are in place to check text compared to the procedures in place to check for errors in statistical reports. A blog in itself might also be seen as less trustworthy than an official web-page.

It also seems that the users did not see an interest in reading about crop-yields in the blog even though crop yields where often discussed in media. These signals where not monitored during the summer of 2018. In order to be able to use the blog to respond to user interests continuous external environment monitoring should be made and the results should be used to make the blog more relevant.

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