

Development of the Model for Measuring the Satisfaction of Official Statistics Users

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ABSTRACT

The number of official statistics users has expanded in recent years, mainly due to the free of charge dissemination of data on the internet and increased interest of public in statistical data. Keeping up with users and their needs has become a challenging task for statistical offices. One of the methods to keep in touch with the broadest scope of users is conducting user satisfaction surveys. User satisfaction surveys traditionally come from the private sector, where their methodology is well developed; however, the experience of measuring the satisfaction in the public sector is limited. The paper presents the development of the model for measuring the satisfaction of official statistics users on a theoretical basis for measuring users' satisfaction from related fields of research (measuring the quality of services, national customer satisfaction indices, measuring satisfaction with websites and measuring satisfaction in the public sector). By defining the factors and consequences of official statistics users' satisfaction, we gain a comprehensive insight into what influences users' satisfaction. Relevance of the theoretically determined model is verified on the basis of empirical data gathered with the web survey among the users and analysed with the methods for structural equation modelling.

1. Introduction

The importance of recognizing users' needs of official statistics data has in recent decade gained on importance. National statistical offices bound themselves to explore this field more in detail because of their user-oriented approach, as well as due to the spread of many official initiatives in the field of quality and broader. The European Code of Practice [1] in its 11th principle declares the importance of the relevance of statistical data, it states that *European Statistics meet the needs of users* and the third indicator of this principle states *User satisfaction is monitored on a regular basis and is systematically followed up*. ESS Standard for Quality Reports (ESQRS) [2] clearly states the needs to collect data about user satisfaction for the quality reporting purposes, as well the Euro SDMX metadata structure for the exchange of reference metadata [3].

Even though there is a need for these data, the development of the methodology in this field is slow and the exchange of knowledge is poor. In 2003 a special project was done about the state-of-art about user satisfaction surveys within the European Statistical System [4], which showed that this kind of surveys are not systematically performed, are rarely part of planned strategies and many times lack firm theoretical background. In the round of first peer review regarding the compliance with the European Code of Practice, Eurostat proposed a common questionnaire for all ESS members, however the results were hard to compare, since the implementation of the survey differed from one NSI to another.

Statistical Office of the Republic of Slovenia (hereinafter SURS) started to carry out user satisfaction surveys already in 1999, with the small survey about the users of the website and in 2001 continued with more comprehensive research on the role of data users in the total quality management of the services in the national statistics. Since then a more systematic approach has been developed and user satisfaction surveys are regularly carried out, every 2-3 years. Different kinds of surveys have so far been implemented: general user satisfaction survey, public image survey, surveys about specific topic (e.g. about the quality of official statistics data, about the satisfaction with SURS's website). All results are published on SURS's website, also in English¹.

The paper presents the development of the methodology for the last user satisfaction survey that took place at SURS. In the first part of the paper we describe the conceptual development of a model for measuring users' satisfaction, then we present the main results from the empirical survey and at the end we describe the verification of the model and the main findings of the survey.

2. Development of a model for measuring users' satisfaction

The development of methodology of the user satisfaction surveys is intense in the private sector, where most of the time the central point of the survey is the balance of customers' perception between the quality of the product and its price. In the public sector, where most of the times the products and services are free of direct charges, this comparison is harder to implement in the research and thus adopted strategies should be applied.

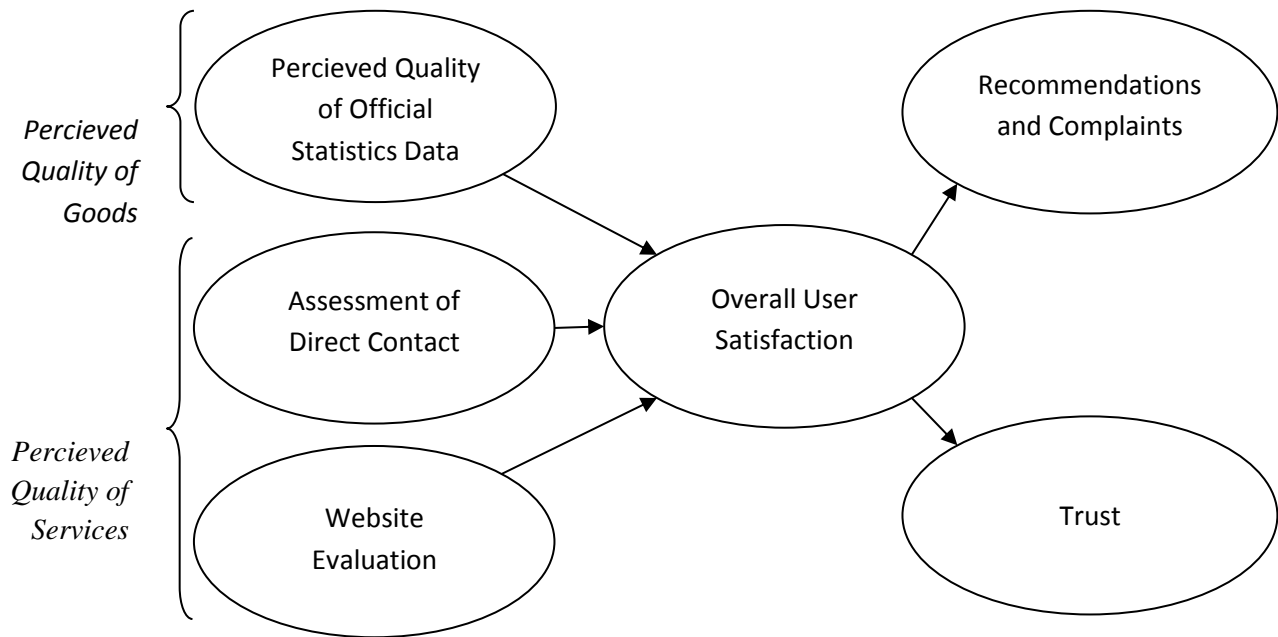
¹ SURS's website for monitoring user satisfaction http://www.stat.si/eng/drz_stat_zadovoljstvo.asp

The starting point to develop our model for measuring the satisfaction of official statistics users was an American Customer Satisfaction Index (hereinafter ACSI)² that uses customer opinions as input to a multi-equation econometric model. The ACSI is a national cross-industry measure of customer satisfaction in the United States. Measuring the satisfaction of customers with the quality of products and services is increasingly becoming an important measure to forecast the success of the company in the future. The advantage of the ACSI is that there exists also the adapted version of the model for measuring in the public sector. The model development took following steps:

- In the centre of our model we kept the *overall user satisfaction*, the same as in ACSI, but changes were done on the side of the factors that influence the user satisfaction and the consequences.
- When defining the factors that influence the overall satisfaction we considered the definition of Grönroos [5] that divided the quality of services in two components: technical quality and functional quality. Technical quality represents everything that is kept by user after the service has been completed and the functional quality represents the perception of a user how a whole service was provided. This division is incorporated also in the European Customer Satisfaction Index (ECSI) [6] and thus we followed the terminology and defined the *perceived quality of goods* and *perceived quality of services*. Theoretically defined dimensions were empirically measured by latent variable - quality of goods was measured with the latent variable ‘perceived quality of official statistics data’; quality of services was measured with two latent variables: ‘assessment of direct contact’ and ‘website evaluation’.
- On the side of the consequences of user satisfaction we followed the original ACSI model and included *recommendations and complaints*. Following the adapted ACSI model for public sector, we defined the second consequence as *trust*, since this is more appropriate in contrast to loyalty (as defined in original ACSI for private sector).

² Website of American Customer Satisfaction Index <http://www.theacsi.org/about-acsi/the-science-of-customer-satisfaction>

Picture 1: Model for Measuring the Satisfaction of Official Statistics Users at SURS.



3. Results of the empirical data

On the basis of the model, the survey questionnaire [7] was built that consisted of the following sections: usage of statistical data, the perception of SURS in general, SURS's statistical data, cooperation with SURS, website evaluation, recommendations and complaints, basic demographic questions. The measures scales for the latent variables were developed on the basis of the detailed review of literature from related fields (measuring the quality of services, national customer satisfaction indices, measuring satisfaction with websites and measuring satisfaction in the public sector and available experiences from other national institutes). The questionnaire was tested with cognitive interviews and in a pilot study.

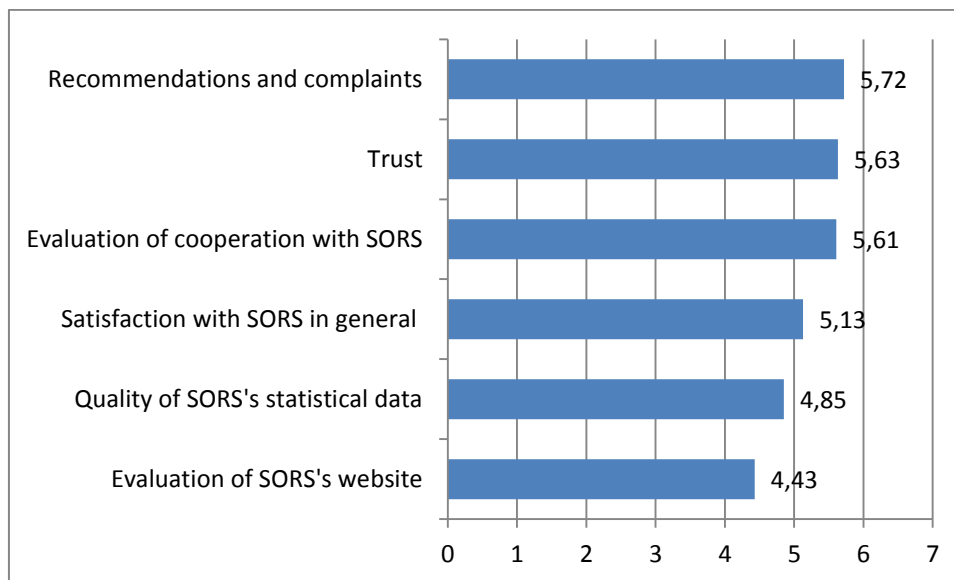
The SURS's registered users were invited to participate in an online survey that took place in Slovene and in English. Response rate was - as it can be expected for these kind of surveys - low - out of 11 565 invited users, 2 680 took part in the survey. The overall response rate was 23%.

The results [8] showed that in the survey participated 60% female and 40% male users. Average age of respondents was 40 years, whereas there was almost one third of those being aged from 25 to 34 years. On average respondents were highly educated, a little bit less than one fifth had a

Master's or a Doctorate degree and further one third obtained university degree. According to the type of users most classified themselves as business entities (37%) and in the research and education sector (23%).

We asked the users five blocks of questions about different aspects of satisfaction with statistical data (on the scale of 1 – strongly disagree to 7 – strongly agree) that served also as an input for the latent variables in the model. Users had a high level of agreement that they don't have any special complaints about SURS's work and that they would recommend SURS as a source of statistical data also to their friends (5.72); high average grades were obtained also for questions about trust (5.63) and good evaluation of cooperation with SURS was reported (5.61). The average grade for satisfaction with SURS in general was somewhere in the middle (5.13); lower average grades were assigned to the quality of SURS's data (4.85) and evaluation of the SURS website (4.76).

Picture 2: Main results of the latent variables.



On the basis of the differences regarding the demographic variables we found out that on average the older users are more satisfied with SURS than the younger ones. Better evaluation was in general assigned by users with a lower level of education, who might be a slightly less demanding group of users. Regarding the type of users, the foreign users stood out as more satisfied and business entities as less satisfied. From the data about the frequency of usage and

the period of time we found out that the more experienced users were in general more satisfied, since they were probably better acquainted with the possibilities that SURS offered and they could use them to a higher extent.

4. Analysis of the most important characteristics of official statistics data

Before we asked the respondents to evaluate the quality of SURS's statistical data according to each quality dimension, we first asked them to think about SURS's statistical data and briefly write down what was for them the most important regarding these data. On the basis of these responses a tag cloud of most frequently used phrases was prepared with the help of a web tool³.

Picture 3: Tag cloud about what is for the users the most important regarding SURS's statistical data, in Slovene only (n = 1497).



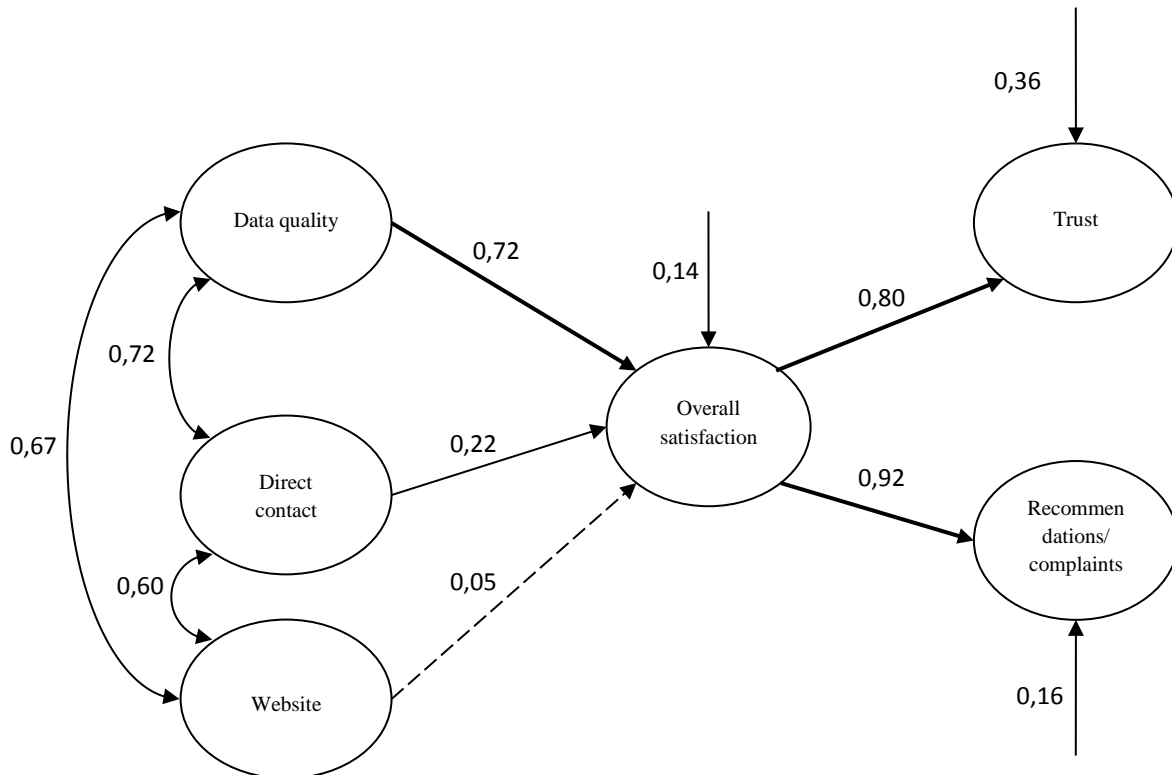
On the basis of this analysis the more frequently appearing terms stood out. On the first place there was the speed of data dissemination, followed by timeliness and accuracy. These dimensions were not surprising since the usual demand from users is that data are published as soon as possible and that they are a good reflection of reality. A bit more surprising was to find high frequency of the term transparency, which showed the wishes of the users to have a good and systematic structure of the statistical data. Besides these, many users expressed the wish that data cover their needs, that the access to data is clear and simple and that the data can be downloaded in appropriate formats and used for further analyses. Quite some users said also that it is important that data are credible, realistic and correct, but also to be produced in a politically independent environment that gives unbiased data.

³Tool Wordle was used: <http://www.wordle.net/>

5. Verification of the model

For the verification of the theoretically proposed model and associations between defined latent variables, we used structural equation modelling that we conducted in a Lisrel program⁴.

Picture 4: Parameter estimates (Standardized coefficients)⁵



For the interpretation of the model we used the standardized parameter estimates and accompanying t-statistics. The strength of the relationship between variables varied a lot, but all of them were statistically significant at the 0.01 level. A strong association between the latent variable data quality and overall satisfaction ($\gamma_{11} = 0.72$; $t = 26.63$) was found. A weak association was present between the variables direct contact ($\gamma_{12} = 0.22$; $t = 10.41$) and website ($\gamma_{13} = 0.05$; $t = 2.80$) in relation to overall satisfaction. Stronger were the associations on the side of consequences: between overall satisfaction and trust ($\beta_{21} = 0.80$; $t = 38.01$) as well as between overall satisfaction and recommendations ($\beta_{31} = 0.92$; $t = 36.47$).

⁴ Lisrel program website <http://www.ssicentral.com/lisrel/>

⁵ Goodness-of-fit statistics: Chi-square = 4.822 ($p = 0.000$), RMSEA: 0.09, SRMR: 0.06, NFI: 0.97, CFI: 0.97.

Taking the empirical results into account we found out, that the data confirm the first hypothesis - the users that perceived the quality of SURS statistical data better are more satisfied, however we couldn't confirm the hypothesis that the users that perceive the quality of direct contact and website higher, also have higher overall satisfaction, since there was only weak association in the model. The hypotheses on the side of consequences were confirmed – the more satisfied the user is, the more he/she is willing to recommend the SURS to others and it is less possible that he/she would hand in complaint; as well as he/she has higher trust in SURS.

One of the research hypotheses was that the perceived quality of goods (measured with the assessment of quality of statistical data) has a stronger impact on the users' satisfaction than the perceived quality of service delivery (measured with the evaluation of the direct contact and the website). It turned out that the quality of statistical data has a greater impact on the users' satisfaction than the experiences how to obtain statistical data. Thus we could confirm that the quality of statistical data has a crucial importance for the users' satisfaction. In case SURS would not be able to fulfil the users' expectations for high quality statistical data, the satisfaction of users would be much lower. Even though the users evaluated SURS website with lower grade of satisfaction, these does not have a strong impact on their overall satisfaction.

6. Conclusion

SURS conducted the users' satisfaction survey on the basis of theoretically defined measurement model and invested effort to develop appropriate measuring scales for measuring each latent variable. Some shortcomings were detected when using the indicators with reversed measuring scale; in the next implementations of the survey they are proposed to be omitted.

The aggregated results of the survey were published on SURS website, along with special release on the website to inform the users about the results [9]. The results were presented at the management board, the meeting of the Statistical Council and a more detailed analysis is available on the intranet site for all employees. On the basis of the results, the main improvement action has been the thorough renovation of SURS website that is still under construction. After the successful implementation of the new website, the survey will be repeated.

7. References

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