Factors Influencing Integration of Official Statistics into Business Study Programmes: In Search of Evidence

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Abstract

In this paper we seek to initiate a scholarly dialogue concerning the integration of official statistics into business study programmes. Building on the findings from the previous stages of the BLUE-ETS project and our own personal teaching experiences we develop and implement a BLUE-ETS survey for business school teachers with the goal of establishing a theoretical and empirical framework with which we aim to identify influential factors determining the mode and level of integration. Based on the identified factors we propose measures for official statistics providers to implement.

Keywords: BLUE-ETS project, business study programmes, official statistics, survey

1. Introduction

It is exactly 15 years ago that Bregar and Ograjenšek (1998) wrote the following:

»Recent fascinating development of information and telecommunications technology has made vast amounts of data available to many millions throughout the world. … In addition, commercial and non-commercial electronic databases on mass storage and distribution media provide large, highly focused datasets. These are particularly common in the field of business and economics. Business and economic databases usually contain statistical data which are heterogeneous in terms of their providers, media, accessibility, contents etc.

Among the most important providers of statistical data in the field of business and economics are national and supranational statistical agencies or other institutions that have to be authorised by law for the collection, production and dissemination of official statistical data (official statistics) according to theoretically grounded and officially approved methodologies. These data represent the foundation for majority of research projects in the field of business and economics. As the data users should be familiar with methodologies behind the data, special attention should be given to them in specialized credited or non-credited statistical courses at the higher education level.«

During these 15 years, development of high-quality economic and business statistics, based on common standards underlying national statistical systems, has been one of Eurostat's most eminent declared goals.

Furthermore, Eurostat and national statistical offices have been paying considerable attention to appropriate training of professional statisticians in the EU and CEE countries. However, the initiative of training wider (non-professional) audiences (e.g. students of social sciences, government officials, researchers and analysts in both private and public sectors etc.) has been largely left aside – despite the continuous acknowledgements of the need to increase **quantitative literacy** of both general and student population (Ograjenšek, 2002).

In our research we aim to identify factors influencing integration of official statistics into business study programmes. In this endeavour we purposefully strive towards a broader focus: we are not interested in one (statistics) course only, but in the

study programme as a whole; we are not interested in experiences from one business school in one country, but try to include several business schools from a number of European countries.

2. Broader Research Framework: Findings from the Previous Stages of the BLUE-ETS Project

The BLUE-ETS Project (www.blue-ets.eu) was a three-year collaborative project on official business statistics funded by the European Commission's Seventh Framework Programme (grant agreement n° 244767) that ended in March 2013. The project involved five national statistical institutes, eight universities and three research institutes that mainly focused on improving data collection from businesses with respect to data quality, cost and motivation of businesses for good reporting, boosting the potential of existing business statistics and opening up new opportunities offered by the new technologies (for more details on project results, see Bavdaž, 2011a; 2011b).

One of the project activities was also to review the literature on the use of official statistics among businesses. It was found out that, to the best of our knowledge, only two studies were conducted *specifically* on the use of official statistics among businesses and they are both from the seventies: Murray & Claxton (1974) assessed managers' attitudes and evaluations concerning the information they receive from government agencies in Canada, and Ellis (1979) reported on the use of census data by the Bell System. Similarly, the review of a sample of business statistics and business decision-making textbooks indicated that official statistics is scarcely, if at all, represented in these textbooks.

Nevertheless, official statistics does play its role in decision-making of some businesses as discovered in research interviews among experts and businesses. These interviews were conducted in five countries (Italy, the Netherlands, Norway, Slovenia, and Sweden). Altogether we interviewed 28 experts from the national statistical institutes, 21 business representatives and other experts on businesses, 15 academic experts and 63 people in 41 businesses. These interviews were complemented by analyses of databases containing businesses' requests for official statistics addressed at the customer support services of the national statistical institutes which showed that **many businesses do use official statistics**. Apart from turning to the customer support services of the national statistical institutes, these businesses also get official statistics by visiting the websites of the national statistical institutes; by turning to their business representatives such as business associations and chambers of commerce; and/or by following specialised or general media.

However, several **obstacles** could be identified preventing businesses from using official statistics (more intensively), among them the lack of timeliness and detail, search problems and lack of interest and awareness of official statistics. Yet, in our interviews with businesses and experts, official statistics were mainly described as *trustworthy and accurate*. This description, however, seems more likely to originate from the image of the statistics producer (the perception of the source) rather than from the quality assessment of statistics they use.

Of course, the use of official statistics and related problems seem to **vary among and within businesses considerably**. Our research suggests that **business size** is the most influential factor. Smaller businesses would typically be less aware of official statistics and less knowledgeable. Consequently, they are more likely not to use official statistics, which corresponds with their modest and occasional use of data in general. Larger businesses, on the other hand, seem to be often more aware of the available data, and seem to use them on a regular basis and more systematically; they might even have specialised departments knowledgeable of these statistics and statistical methods. Other factors influencing the use of data in general and official statistics in particular are the type of industry and international orientation, but also

less tangible factors such as attitudes of management towards data, and presence as well as maturity of evidence-based or data-driven decision-making.

Official statistics are also not equally relevant to all business activities. Users of official statistics would mainly be found in management (from middle to top management, depending also on organisation), analytical departments (in accounting and financial departments as well as those dealing with strategic planning) and departments directly linked to the market (sales, purchase and marketing; partly also human resources).

While teachers, when demonstrating to (business) students how official statistics can be implemented in the processes of evidence-based decision-making, cannot do anything about the majority of obstacles listed above (these should be dealt with by official statistics providers directly), they can raise awareness of official statistics and interest for it. Let us take a look at how we try to do that at our school.

3. Integration of the Official Statistics into Business Study Programmes: How We Do It

Our working knowledge on inclusion of official statistics in the business study programmes stems from our own experiences teaching undergraduate, graduate and doctoral students at the University of Ljubljana's Faculty of Economics (FELU).

Let us demonstrate what we believe to be typical elements of official statistics in an introductory business statistics course using the course on *Introductory Statistics* at the University of Ljubljana's Faculty of Economics as a showcase.

From the **technical point of view**, the course on *Introductory Statistics* covers relative numbers, measures of central tendency and variation, as well as measures of concentration along with relevant tabular and graphical presentation forms. From the **methodological point of view**, introduction to measurement theory is an important part of the course. Much attention is dedicated to sources of secondary data and criteria of their evaluation. On the other hand, sampling and methods of primary data collection are mentioned in passing only and dealt with in detail within the *Statistical Analysis* (uni- and bivariate inferential statistics) and *Research Methods and Techniques* (research methodology and introduction to multivariate analysis) courses.

The teaching process takes place in form of lectures, group tutorials and computer lab seminars. In our experience the use of official statistics resources supports both teaching and learning processes. These can be carried out **in-class** or **in the process of students' independent exploration** which usually forms the basis of both knowledge and skills evaluation.

Topics of official statistics covered in the course on *Introductory Statistics* include statistical units, classifications and registers, some elements of population and business statistics as well as price and trade statistics. When choosing an official statistics topic to be included into our course we consider the following criteria (*cf.* Bregar, Ograjenšek, Bavdaž, 2006):

- **topic relevance** (the selected topic should have a clear link to the economic and business field);
- **data and metadata availability** (metadata availability seems especially important for teachers as they are typically too demanding for explanations at an introductory level);
- **mode of access** (the most important data figure as news accompanied with short description while detailed data are typically available in databases, which often require technical skills beyond intuition);
- **reliability of access** (official statistics websites have to be designed to accommodate the large variety of devices from which users can access the websites);
- **stability of user interface and data organisation** (stability makes it easier for the

teacher to guide students around the websites although improvements in the data organisation would be useful; currently, the data are organised according to the process of statistics production and not according to the purposes of their use);

- **charm factor** (interactive tools stimulate explorations based on constructivist paradigm of learning).

There seems no reason to think that these criteria are no longer valid when it comes to non-statistical courses but it could be that the topic relevance gets a higher weight. Additionally, other factors might be relevant, such as commercial data sources specific to a field or profession. This is what we aimed to discover in our empirical study.

4. Integration of the Official Statistics into Business Study Programmes: How Do Our Colleagues Do It?

4.1. Research Motivation, Measurement Instrument and Sample Characteristics

To compare our own experiences, that might be specific to our institutional and educational environment, with the situation of colleagues from other EQUIS-accredited European business schools, we decided to conduct a BLUE-ETS survey among them.

Our measurement instrument was an online questionnaire which consisted of 35 questions. The estimated time necessary to complete the questionnaire was 10-15 minutes. The survey was active in the period between June 19th and November 11th, 2011. An invitation to fill in the questionnaire was sent to 5,274 full-time faculty members of 70 European EQUIS accredited business schools via e-mail. A total of 228 usable responses were obtained (192 complete and 36 partial), with an additional 87 returned as undeliverable, thus yielding a response rate of 4.4%.

Let us take a look at some of our sample's characteristics. 191 respondents answered the question about their gender. 133 (69.6%) were male, 58 (30.4%) were female.

190 respondents answered the question about their level of education, a large majority of which (178 respondents or 93.7%) had a doctoral degree, followed by 11 (5.8%) respondents with a master's degree, whereas only one (0.5%) respondent had a bachelor degree. More than one third of the respondents were full professors, followed by associate professors (28.9%) and assistant professors (24.2%).

189 respondents provided us with an indication of their current mode of employment. 179 or 94.7% of the respondents were full-time employees of their respective academic institution, followed by 8 (4.2%) respondents who were employed part-time. One respondent (0.5) worked for the business school on a contract basis and another one (0.5%) indicated some other mode of employment.

The average number of years of the respondents' professional experience was 17.1 years (minimum 0 years, maximum 50 years, SD 10.8), whereas the average number of years spent teaching at a higher education institution was 15.1 years (minimum 1 year, maximum 44 years, SD 9.6).

Finally, 162 (71.7%) respondents indicated that their teaching is primarily focused on business, 47 (20.8%) on economics, 9 (4.0%) on statistics and 8 (3.5%) on econometrics.

4.2. Selected Preliminary Evidence

Our preliminary empirical evidence is organized along five major questions:

- **How frequently do teachers from the European business schools use official statistics?** From our survey it follows that only a very small percentage of teachers who use materials prepared by official statistics providers (they amount

to 90+ or a good half of our respondents) *never* use any official statistics provided by the national statistical office (3.5%), international organisations such as UN, OECD or IMF (5.3 %), Eurostat (10.5%), national central banks (13.2%) or the European Central Bank (16.7%).

- **How do teachers from the European business schools use official statistics?** Our colleagues usually use the materials or sources prepared by official statistics providers either to practically illustrate the use of a given statistical technique (we assume this to be a predominantly *in-class activity*) and/or to find answers to research questions of interest (we assume that this to a large extent takes place during processes of *students' independent exploration*).

- **What factors are influencing the integration of official statistics into the business study programmes?** Our colleagues seem to give more emphasis on free access, unbroken time series of data, easy downloading facilities and the possibility to launch own data queries / create own tables online than the actual institutional official statistics production framework (as captured in metadata).

- **What obstacles are preventing the integration of official statistics into the business study programmes?** Several threads can be identified here. One is related to the problems usually associated with the use of secondary data. They stem either from differences in conceptual definitions and/or operationalization on one, as well as data organization (e.g. unusable age classes for the given research problem) on the other hand.

  Another thread has to do with the nature of business research which is often case-based. For example, the focus of research is on a single company but the process of obtaining permits to access micro data from official statistics providers is a long and tedious one which is why teachers prefer to opt for alternative resources (e.g. company websites, annual reports, or – if they can afford access, and EQUIS-accredited schools usually do have the resources - commercial databases).

  Finally, as commercial data providers seem to better understand the specific needs of the business community with regard to the industry analysis, their sources of secondary data are presented to students in place of official statistics resources.

- **What recommendations do teachers from the European business schools have for providers of official statistics?** Most recommendations are related to the issues of access, navigation, and downloading facilities which should come as no surprise. However, there are two qualitative comments which deserve special attention: (1) … *make it possible to combine your data with data from other sources … in an international context …* – we understand this comment as a call to further data dissemination standardisation; and (2) … *My students are strongly discouraged from using the CIA Factbook which is subject to the criticism of distortion. I mention this because internet searchers often hit this first when [students] use a search engine.* – in other words, official statistics providers should rethink their positioning with the popular online search engines.

This descriptive overview is a starting point for more detailed analyses we plan to carry out in the months to come.

5. Plans for Future Research

By building on the findings from the previous stages of the BLUE-ETS project, our own teaching experiences and the BLUE-ETS survey among teachers at business

schools across Europe, we are interested in identifying the current state of affairs and future needs of official statistics users. Ultimately, both should help us propose a set of measures for official statistics providers to implement with the goal of increasing the quantitative literacy of the student population destined to form future business communities. This is what we call the **external prerequisites** to the use of official statistics in an educational setting.

We are, however, also aware of the fact that when it comes to using official statistics in an educational setting, there are many **internal issues** to consider, such as the course length and intensity, the number of students, students' previous knowledge, etc. These issues typically do not prevent the use of official statistics, but they might influence the mode and extent of their inclusion, and thus also need to be accounted for.

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