Businesses as Users of Official Statistics

Boris Lorenc[1], Mojca Bavdaž[2], Deirdre Giesen[3], Rudi Seljak[4], Vanessa Torres van Grinsven[3,5]

[1]Statistics Sweden, Box 24300, 104 51 Stockholm, Sweden
[2]University of Ljubljana, Kardeljeva pl. 17, 1000 Ljubljana, Slovenia
[3]Statistics Netherlands, CBS-weg 11, 6412 EX, Heerlen, the Netherlands
[4]Statistical Office of the Republic of Slovenia, Vozarski pot 12, 1000 Ljubljana, Slovenia
[5]Utrecht University, PO Box 80140, 3508 TC Utrecht, the Netherlands

Abstract

Motivation of data providers in business surveys to accurately and timely report requested data is arguably related to their perception of usefulness for the business of the statistics that they contribute to. Evidence from national statistical institutes (NSIs) indicates that data providers to business surveys may perceive official statistics as of little use for businesses. Increasing the perception of usefulness of the data collections might thus help achieve better - more accurate and timely - statistical reporting. This paper addresses one aspect of this conceptual framework: use of official statistics by businesses and the problems businesses encounter in doing that. Sources were: interviews with representatives of businesses (both data providers and potential users of official statistics), interviews and data extracted from the NSIs of the Netherlands, Norway, Slovenia and Sweden regarding business practices in using official statistics; and interviews with external experts to be found in bodies like chambers of commerce and similar. The paper highlights uses of official statistics, identifies hinders to its use and suggests some areas of improvement, with the goal to enhance NSIs' abilities to design effective incentives in data collection for official statistics production.

Key Words: data providers, data users, availability and use of statistics, data-driven decision making, communication with businesses

1. Introduction

Participation in business surveys has thus far received a more limited research attention within survey methodology than that in household surveys. Among other reasons, higher complexity of business surveys and their often mandatory nature might have contributed to this.

The specific characteristics of business surveys (Rivière, 2002) make them in practice a distinct domain of survey methodology. For instance, with respect to data collection, indications of the intricacies can be found in the research into the response process in establishment surveys (Edwards and Cantor 1991, Willimack and Nichols 2010). As a rule, different employees with different roles are involved in a business survey, they have different authorities (gatekeeping, data access and retrieval, authority to release data, etc), a record keeping system is usually essential in order to provide data, and – with that – personnel competence to retrieve information and be able to engage in the specific

practices of participation in the survey that are established in the business (Bavdaz 2010, Lorenc 2007).

Besides complexity, a considerable proportion of business surveys are mandatory, at least when it comes to surveys conducted by national statistical institutes (NSIs) as producers of official statistics. The surveying organisation has in such cases the authority – given to it by law or regulation – to strongly request a response, backing this by mentioning and later perhaps enforcing a fine or other sort of negative consequence. However, that a survey is mandatory and thus that a business might eventually be forced to respond, does not guarantee that the submitted data are of high quality.

Parenthetically, even the first premise of the effect of mandatoriness seems not to bear. Some initial data from the Swedish Register of Data Provision indicate that a survey being mandatory does not suffice to make businesses respond: 30% of the sampled businesses in 2009 in Sweden were nonrespondents in at least one of the mandatory surveys that they were sampled into.

We are not aware of any prior published research explicitly dealing with the issue of balance between response burden and data quality moderated by motivation (but see the accompanying paper Giesen and Haraldsen 2012). On the one hand, it can be assumed that mandatory reporting improves data quality by improving response rates. Also, respondents might be more motivated to provide accurate data for mandatory surveys as the mandatory status signals that the data are important and that sanctions may follow for providing wrong data. On the other hand, it can also be argued that data obtained by pressure backed by legal consequences might lead to suboptimal level of data quality. Approaches aligned with the latter way of reasoning have been formulated in several disciplines. Here, we mention the one from psychology, where individuals that are driven by external factors, such as avoiding punishment, have been shown to provide output of lower quality than those intrinsically motivated (Ryan and Deci 2000).

A research programme proposed by Bavdaz and Giesen (2009) embodies a conceptual framework focusing on the relationship between the need for official statistics, produced on the basis of survey and administrative sources (which drives data collection), and use of official statistics in society (which drives the dissemination of statistics). The framework assumes that enhanced synergy between the two will lead to improvements in the quality of collected data, as well as to a wider use of the produced statistics.

Increased use of products of official statistics for businesses' own purposes would make official statistics more 'own', more intrinsic from the businesses' perspective, leading to improved quality of participation in surveys and improved data provision. Further, improved provision of data with higher quality would lead to more efficient production of better official statistics, thereby providing for better fact-based decision-making for business, policy and other societal purposes.

Within that research programme outlined above, the current paper explores one aspect, namely use of data in businesses. There are accompanying papers that address business motivation (Torres van Grinsven, Bolko and Bavdaz 2012) and the relationships between response burden, motivation, and data quality in official business statistics (Giesen and Haraldsen 2012).

Due to the complexity of the phenomenon, we use in this paper a number of perspectives to address it. Insight into some aspects of the businesses' use of official statistics is naturally gained by approaching businesses themselves. Further, businesses' use of official statistics should also be observable on the side of producers of official statistics, namely in the first hand NSIs – to the extent that they produce and successfully communicate to the businesses availability of such useful statistics. And thirdly, as some official statistics may be tapped into other formats before reaching businesses, further insights into how official statistics aids (or may aid) businesses can be gained by approaching institutional representatives of businesses like chambers of commerce and other intermediaries that may act as catalysts for business interests and activities.

Our approach to this study assumes a rational, fact-based decision making within businesses. However, we are aware that, even in the business world, its counterpart~ intuitive decision making based on heuristics/impressions~ may well also be applied. Examples of this latter kind include, for instance: do what appears to be successful for others, repeat what seems to have worked in the past, trust what others think to be true (Pfeffer and Sutton 2006). Our methodology (e.g. our guide for interviews with businesses, Section 2) does take this into account. Still, the former approach is in our study represented by a strong emphasis on data as the basis for fact-based decision making. Conceptually, we distinguish between data that are internal to the workings of a business (e.g. data on production, sales, wages, etc), and external data (data on inflation, unemployment, wages within a specific industry and region, etc); see also McGee and Sawyerr (2003) and Sawyerr, McGee, and Peterson (2003) on the distinction. The importance of data for business management is expressed by data being the centrepiece of the practice of accounting, which is essential and even legally mandated for responsible conduct of business. Additionally, some of these data are mandatory to report to the state (tax agency, employment agency, social insurance agency, etc), thus some of the businesses' internal data contribute to what is to become external data. NSIs as government agencies also claim their portion of these data, for the purposes of aggregation and production of important statistics: the state of a country's economy or other aspects of the society. In such a perspective, it is the use of these latter data – businesses' internal data that have become externalised and then aggregated into official statistics – that are of relevance for the present study.

The main body of the paper consists of the next two sections. The first (Section 2) presents in more detail the methodologies that we used to obtain and analyse data, while the second (Section 3) presents the results themselves. The final Section 4 summarises the findings and presents some more general conclusion that we propose on the basis of this study.

2. Methods and Data

Having the purpose of carrying out a multi-faceted exploration of businesses' relation to official statistics by taking into account both use of official statistics and data provision for it, this study approached the subject-matter from three perspectives:

1. The businesses' perspective, itself further distinguishing between data use and data provision. A multinational field study was carried out with that aim, involving the Netherlands, Norway, Slovenia and Sweden.

2. The perspective of NSIs as producers of official statistics. Interviews with staff and an analysis of data sources were conducted at four NSIs, namely Statistical Office of the Republic of Slovenia (SORS), Statistics Netherlands, Statistics Norway, and Statistics Sweden.
3. The perspective of 'external experts', namely representatives of some of the organisations that commonly act as mediators of official statistics to businesses.

Each of these perspectives is further detailed in the subsections below.

2.1. Businesses' perspective

Instrument. Qualitative interviews were conducted as semi-structured interviews with a fixed list of topics within three broad areas and with a list of suggested specific questions/probes within each topic:

- Use of data in businesses:
  - Use and quality of internal data
  - Sources, use and quality of external data
  - Further need for external data and proficiency of their use
  - The NSI as a source of external data: awareness, knowledge and use
- Motivational aspects in business survey response behaviour:
  - Participation decision
  - Response process
  - NSI surveys and possible improvements
- Links within businesses between people responding to the NSI's and other surveys (data providers in business surveys) and people who use internal or external data as part of their job (data users), e.g. people involved in various analyses and production of reports, people at managing positions etc.

The current paper reports on the first and third main area in the list above, while the second area (the motivation aspect) is treated in a separate paper (Torres van Grinsven et al. 2012).

Sample. While in some of the countries some stochastic procedure was involved in selecting businesses to be contacted for field visits, there were also practical considerations that in other cases led to what can more be described as convenience sampling. In any case, choice of businesses contacted to propose field visits to aimed at maximizing heterogeneity of collected data. Variety in two properties was deemed essential in order to achieve this: size class and economic activity. Size classes were defined in terms of the number of employees: small (less than 50), medium (at least 50, less than 250) and large (at least 250). Approximately the same number of businesses in each of the three size classes was achieved, while for economic activity classes – which were numerous on the NACE4 level – the constraint, also met, was of not visiting more than one business per class.

Procedure. Initial contacts were established by phone. The recruiting strategy was to start with one interview per business agreed in advance. In some businesses, we targeted data providers to business surveys while in others we targeted likely users of official statistics data (in particular accounting, economic, analytical, (quality) control departments, etc). To get more than one interview per business, we occasionally used what might be called a "foot in the door" technique; namely, once the first interview was done we tried to get another interview with a different target person in the same business.

In some situations this worked, in others it did not. For instance, in a large business in Norway, no data provider to business surveys could be identified even with the help of a data user although the business did participate in several NSI surveys. This probably reflects the complexity of the organisational structure in this category of businesses and a distance between data users and data providers in them.

Interviews were recorded. In some cases gifts were given before or after the interview as a token of appreciation. In the Netherlands, Slovenia and Sweden, the interviews were transcribed. In Norway the interviews were summarised, apart from key quotes from interviewees which were transcribed. Thereafter the interviews were analysed by us, the authors, and project collaborators using thematic text analysis, each country material separately due to language constraints. This was reported in a first-level-of-analysis summary, in English, approximately ten pages of single-spaced material per country (Bavdaz 2011). This material was the basis for a second level of analysis, whose results are presented here.

2.2. NSI perspective

In operationalising the approach to studying the NSI perspective on businesses' use of official statistics, issues important for further exploration concerned: i) which NSIs' departments and employees do businesses turn to, ii) what kinds of businesses, and what kinds of employees within them, seek NSI statistics, and iii) to what kind of use (or intended use) are NSI statistics put by businesses.

It has to be noted that it was not always straightforward to explore these areas. For instance, there is very little data on what kinds of employees within businesses ask for NSI statistics.

Data sources regarding NSIs that this study used can be grouped into three categories:

a) Data on user support that the NSIs provide to businesses
b) Other data and documents on businesses' use of NSI statistics
c) NSI experts' opinions regarding businesses' uses of NSI statistics

Ad a): Data on user support to businesses. Users occasionally ask for assistance in identifying, locating or using NSI statistics. NSIs support their users through various channels, including: telephone support, Internet support (in web and email format), regular mail and fax, and providing office hours for personal visits.

User support is in general provided either in a dedicated organisational unit of an NSI or by NSI's subject-matter unit that produces the statistics in question. Given that the former units are a central and unique (per NSI) entry point for business support in their role of users of NSI statistics, we studied documentation regarding requests that businesses make to these units. Each of the participating NSIs did have at least one such data source, though none of them documenting requests through all the channels. Documentation practices regarding the requests varied considerably across the four NSIs. Issues that frustrated attempts to analyse these data arose from deficiencies in: i) identification of businesses as a specific target group in databases with requests; ii) quantity and nature of collected data on each request; iii) amount of information saved for some channels (e.g. for email support, telephone support and personal visits); iv) variety of formats; v) access issues; vi) appropriateness for analysis.

Ad b): Other data and documents on business use of NSI statistics. Four additional data sources were considered suitable for further analysis. In the Dutch NSI, customer satisfaction surveys for users of Infoservice (service that assists users in accessing data they need) and (non)respondents to business surveys, interview reports from field visits, and visits to large businesses. At Statistics Sweden, invoices to businesses regarding provision of statistics on request.

All participating NSIs conduct various satisfaction surveys but, except for the Dutch one, they either had some methodological limitations such as large non-response and low coverage, or do not distinguish businesses from other categories of users. Other potential data sources included website usage statistics but these suffered from the problem of not distinguishing businesses from other users; quality reports but these limited themselves to enumeration and did not provide in-depth argumentation of relevance to the business community; and reports on on-site visits, which were too few.

Ad c): NSI experts on businesses' use of NSI statistics. In general, we initially contacted or interviewed staff working in the customer support unit and addressed some of the heads of departments (e.g. process owners of data collection, directors of statistical areas, communication services and dissemination, etc.). In the course of those contacts we also obtained suggestions of whom further to interview, and then interviewed also these persons. All in all, 28 persons were interviewed in the four participating NSIs.

2.3. External experts' perspective

We identified experts outside of the NSIs that could be assumed to know businesses reasonably well and could provide information about actual or potential business use of NSI statistics. These included: business association representatives (e.g. general and specialised Chambers of Commerce) and experts on businesses (e.g. consultancy firms, or agencies supporting small and medium-sized enterprises, entrepreneurship in general or some specific economic activity in particular). Twenty-one external experts were interviewed.

We sought this kind of opinion for several reasons. First, experts presumably came in contact with numerous businesses, so their opinion could be seen as an efficient first approximation to what one is to find in the field. Furthermore, their expertise in businesses in various economic sectors and of different sizes, gained over a period of time, could provide valuable insights to add to the cross-sectional field research that we carried out (cf. Section 2.1). Finally, external experts could also provide a perspective external to an NSI and thereby be a complement to the information gained by analyses of the NSI material (cf. Section 2.2).

3. Results

The exposition follows the interview guide structure (cf. Section 2.1). It covers first internal data and then external data, and continues with the NSI statistics as one form of external data. The next part of the section covers businesses' use of NSI statistics and issues with the use. Finally, relation between data providers and data users in businesses is covered. However, in order to provide a context for relating businesses' use of NSI data with what NSIs make available, we begin by giving – with businesses in focus – a brief presentation of the ways NSIs disseminate the statistics they produce.

Before proceeding, it should be noted that not all statistics that an NSI produces is official statistics. Additional statistics that an NSI produce could be statistics relevant for a certain official stakeholder but that the law does not include into official statistics production, or that additional processing, estimation and presentation of the results on the basis of already existing data was done on commission for a certain external entity. Three of the four NSIs in the study mentioned that they provide statistics on this latter basis. While important both for dissemination and pricing policies, for brevity of exposition we however here disregard this distinction.

3.1. Channels for dissemination of NSI statistics

Fulfilling their missions of providing relevant statistics as a foundation for fact-based decision making, the four NSIs have in place multiple channels of making the produced statistics available to their users. In general, one can note that the web has become the main medium for dissemination of official statistics.

Within a web site, the NSI typically provide different categories of data:

i. entry page of the web site, with main indicators of the society's current status (unemployment, inflation and the GDP as the most frequent statistics displayed),
ii. press releases, a form of highly summarised statistics in the first hand intended for journalists,
iii. subject-matter statistics: there are regularly over a dozen of such areas of statistics on the web site (e.g. agriculture, living conditions, prices, judiciary, and so on), these often subdivided into more specific areas; within each area, the level of presentation would vary further, from analyses and descriptions aimed at non-experts, over more detailed tables and figures, to reports with deeper analyses pertaining to the specific topics. Some of these reports are obtainable also as printed publications or downloadable in pdf format.
iv. Statistical databases providing access to even further data in subject-matter areas; these data may be browsed and selections made of relevant data to view or download in different file formats. For instance, Statistics Sweden's statistical database contains at the time of this writing about 2 500 hyper-cubes with data.

Presented in this manner, the content can be seen as comprising several levels of complexity: from few central statistics, over more and more developed analytical and methodological treaties for different kinds of users, to more or less aggregated primary data.

Two comments regarding this increase in the level of complexity or detail: (a) the increase implies also a higher competence of the users to interpret or in other ways avail them of the data/statistics; (b) the increase implies consequences for confidentiality protection as some micro-level data provided by businesses to an NSI are confidential rather than in the public domain. Breach of confidentiality may negatively impact businesses' readiness to provide to an NSI valid and correct data in surveys.

In addition to the above structure, only one NSI had a separate web site dedicated solely to businesses (CBS, not dated). This website was both aimed at businesses as users of statistics and as providers of data to the NSI. It contained links to statistics relevant to businesses and survey questionnaire-specific information. Advance letters used in business surveys by the NSI refer to this website.

While all of the NSIs still use printed publications to disseminate statistics, their importance as a medium for disseminating statistics has apparently diminished, if not for other reasons than for the possibility to without extra time delay and cost download an electronic version of the relevant document from the web site.

In order to support and promote use of official statistics, all the NSIs have a customer support service in place (cf. Section 2.2). The services are accessible by multiple channels, including web, email, telephone and visit. Additionally, some of the NSIs produce a customer magazine that promulgates use of official statistics.

With the exception of Statistics Netherlands who maintains the dedicated site, businesses are to a fairly small extent treated as a separate customer group with distinct, recognised and addressed needs. This general conclusion apparently applies both on the dissemination side (they are mainly not treated as a separate customer group) and on the side of providing support (the support services do not distinguish businesses as a separate group of customers when filing requests into their case management systems). In fact, it is only in 2011 that two of the involved NSIs have initiated a revision of their communication strategies in order to distinguish businesses as a separate, explicit customer group.

3.2. Internal data in businesses

That internal data were generated by businesses in the course of carrying out their activities was an expected finding. The areas where internal data were generated included: production (including process data), sales, wages, financial accounting, logistics and marketing, among the many other and more detailed examples. Some, but far from all, of these data were by laws and regulations mandated to be kept. All these internal data arguably aided businesses in their fact-based management and decision making.

There was some awareness noted regarding potential quality issues with internal data:

a) observational data (data on production, sales, etc) were considered more reliable than data obtained through questionnaires (i.e. data on opinions),
b) insight was noted that internal data can be subject to errors; however, this seemed to be projected onto others (internal data are "*completely trustworthy, [that is,] accurate, reliable, valid and delivered in time*", but if errors occur it is "*other employees of the company at other departments*" that make errors, and the errors are "*corrected as quickly as possible*"), or collective guilt is invoked ("*garbage in, garbage out*"), possibly indicating a sensitive topic.

We, the researchers, had an impression of a strong effect of the factors of business size and industry on the amount, complexity and the approach within the businesses to using internal data. As this study was not quantitative, we are not in the position to give other than indicative substance to such claims. (N.B. This note is valid for other researched aspects too.) With this caveat, the richness of internal data and their use in fact-based decision making seemed to increase with the business size and depend on industry (for instance, logistics and retail were examples of industries in which sizable quantities of detailed data were collected with the help of modern technology and used to improve efficiency and profit). Intuition and experience, as the other basis for decision making, did exist even if there was a strong use of data; however, intuition seemed to be almost the sole basis in some small businesses, as this research note indicates:

> *Big decisions in a small firm (like whether to make a big investment or to employ someone) are made based on the impression about the economic cycle.*

There were divided opinions on whether the recent economic downturns call for more or less use of decision making based on data, as opposed to decision making based on intuition. Due to known methodological issues with predictions in times of unstable economic development, such an observation seemed in hindsight rather expected.

3.3. Data external to businesses

In specifying the meaning of the term "external data", the examples that the interviewees generated included those data provided by: trade/industrial organisations, central banks and other banks, daily newspapers and other media, services like Bloomberg and Reuters, different notification services, credit rating agencies, and so on.

NSI or their products were seldom spontaneously mentioned as a source of external data. In the few cases they were, the consumer price index (CPI) and the employment figures were mentioned. It transpired in the interviews that NSI data still were used to a greater extent than the direct mentioning of an NSI implied, however without a realisation that such data come from an NSI.

Considerations regarding quality of external data took into account relevance (validity, fitness for purpose), accuracy (reliability) and timeliness as primary factors. There seemed to exist in businesses a rather strong demand on more timely data, something that some non-NSI services were seen as far better in providing than an NSI. However, there was at the same time an understanding that – however timely – inaccurate or other poor quality data will likely be misleading.

Related to this, NSIs seemed to have a standing as an impartial, trustworthy source, which was not always the case for other kinds of services or bodies that provide data to businesses. It was, for instance, noted in an interview that

> *commercially produced statistics were more or less biased, and therefore could not be trusted and used in the same way as the official statistics from NSIs.*

Such a stance, however, seemed more likely to originate from the image of the statistics producer (the perception of the source) than from an actual quality assessment of specific NSI statistics.

3.4. Businesses' use of NSI statistics and their needs for more statistics

The businesses' use of NSI statistics primarily concerned official statistics about: wages and labour market, productivity, economic growth, trade, national accounts, CPI and other prices indexes, statistics on import and export, demographics, and so on. Also, available information from business registers, kept by the NSIs, was sought where applicable, as well as the statistical database was used to access additional information (cf. Section 3.1, item (iv)). Mainly at SORS, there was also an expressed interest in classifications.

There were numerous uses of these NSI statistics, the prime examples including: benchmarking (comparison with competitors, the industry, and the economy in general), market analysis (exploring new markets and new potential customers), reporting (annual reports, annual planning), tenders and official applications, and contracts and agreements (wage negotiations, price adjustment, etc).

Interviews with external experts indicated importance of periodicity of data use: the data can be used either to systematically analyse the market on a regular (usually monthly) basis, which included searching for various indexes; or preparing annual reports and looking for macroeconomic data for that purpose. These uses can tentatively be denoted *operational* and *strategic*, respectively. Strategic data use would occur towards the end of the fiscal year and go along with preparation of annual report and long term plans, while operational data use would be done on a daily, weekly and monthly basis when businesses check financial data, liquidity of business partners, and so on.

Several kinds of issues with the use of NSI statistics were revealed in the course of the analyses:

1) lack of awareness that required statistics exists at an NSI,
2) lack of awareness that existing NSI statistics or a statistical product can be of use for the business,
3) issues with
    a) finding data,
    b) using/interpreting data,
    c) correspondence of NSI data with internal data,
    d) timeliness of data,
4) need for additional (usually, more detailed) data.

Most of these issues could plausibly be tackled by a more appropriate communication of statistics to businesses. We return to that in the closing section.

Ad (1) – (2). These issues stem from the relatively low awareness of the NSI and lack of more detailed knowledge about it. The issues were observed in the interviews with businesses, specifically through low recognition of NSI products and data. For instance, an interviewee from a business

> *...had not been aware of NSI statistics as potential information source and thus had never considered it as applicable in their business.*

Ad (3). (a) About one third to one half of the requests to customer support services (with a caveat about data not being complete, cf. Section 2.2, item (a)) ended by the service pointing the user to a piece of information already existing on the web. This is likely an indication of the potential for improvement of the web sites' structure and usability.

(b) Comments by the businesses indicated that the content and structure of the data available at an NSI (i.e. through the web site) is difficult to penetrate. Among the information the businesses would like to have more of was how businesses of different types and sizes may make best use of the statistics, this perhaps given for the different levels of analyses, ranging from macro-level reports to raw data.

(c) NSI data were either considered to be too aggregated, too general to be of specific use, or detailed, disaggregated but not in a way which matched their internal data

classification. Therefore in both cases the data were far from fully useful. Implicit in these comments was that, in order to be useful, external data should mirror internal data. Metadata documentation that should support this step seemed often to be too lengthy to digest quickly as well as too complex to be grasped by a non-expert.

Ad (4). Most common were requests – predominantly from advanced data users – for more detailed data. As pointed out before, the more need there is for greater detail, the larger is the risk of revealing confidential information on competing businesses in the industry of interest to the business, if the need is fulfilled. Thus, an NSI – prior to delivering such detailed information – would need to carry out a confidentiality check. Would also some estimation be needed, this would entail further additional work of the NSI on that particular request. Three of the NSIs did provide such analyses on commission and (due to confidentiality concerns) not always were in the position to provide as detailed data as requested.

Additional suggestions included:

a) more time series data (interestingly, one suggestion concerned time series on what the business themselves have reported, to use in benchmarking within the industry – leading to the idea of creating an own account with the NSI where all previous data can be accessed),
b) internationally exposed industries having special data needs that were not fully met by an NSI, due to the fact that the focus of an NSI is national per definition; in Europe, Eurostat or UNECE (and in other areas other supranational statistical agencies) might be of more use in meeting the needs of businesses active on multinational markets, as illustrated by

> *businesses that are oriented to international markets claimed that NSI statistics are not sufficient enough for their extent of business, thus they are using international data sources as well, e.g. Eurostat.*

Our findings thus show that there is potential for improving the use of official statistics by businesses. However, it should be noted that our data also indicate that businesses already are an important group of users of official statistics.

3.5. Relations between data users and data providers in businesses

Based on several of the sources of information, relations within businesses between data users and data providers would in general be deemed to be moderate at best. In large companies, these two roles would often be placed at different departments or on different levels of organisation. In very large companies these departments would even be physically apart, being placed at different locations. In very small businesses, for instance one-person companies, the owner would usually be the sole potential data user; however, a considerable proportion of these businesses commonly employ an accounting firm, which also would provide data to the NSI. Thus, it was in medium-sized businesses that the chances were highest that a mutually recognised relation between data users and data providers within businesses could exist.

The data below, coming from our first-level analysis notes, indicate a somewhat closer relation than indicated above; it should however be borne in mind that our selection of people to interview within a business often was such that the first person interviewed recommended the next one, implying a somewhat higher chance of knowledge of the other person than had some random sampling mechanism been used.

Two of [the data providers] had no precise knowledge concerning the use of external data in general or NSI data in particular in the company. Thus the link was inexistent. In the third case, [...] he knew about the use of some other external data by the company, but he did not know if NSI data were collected and used elsewhere in the company. In the fourth case [...] occasionally there were meetings between the data users and data providers to business surveys.

Thus, this account suggests that very coarsely, about a quarter of businesses have relatively close connections between data users and data providers. However, would ours' have been a quantitative study, we would probably have needed to consider this an overestimation, likely caused by selection bias.

Further indications of the nature of relations between data users and data provides include the following.

Although there seems to be a closer link between data users and survey data providers in medium/small businesses than in large businesses, there is some evidence that also in larger businesses these groups may be aware of one another and to some extent communicate.

[I]n one case both data user(s) and data provider were co-workers, employed at the same department [...] while in the other case both data user and data provider(s) acknowledged that there is someone in their company who reports or uses statistical data, but were somewhat less confident to exactly name people and departments involved in those tasks.

4. Conclusions and discussion

Our study was initiated with the goal to investigate conditions and prospects for strengthening the loop between data provision to NSIs and use of NSI data within businesses, and – in that context – to identify obstacles for higher use of NSI statistics by businesses.

The results indicated that the two roles – data users and data providers – typically interacted to not more than a moderate degree with each other. In other words, the loop did not fully close for several reasons, including:

a) too big a distance between data providers and data users within mainly larger businesses in terms of different organisational units, different levels of competence and authority, and possibly physical distance,
b) failure of the loop to close in those businesses, mainly small, where data provision was the task outsourced to their accounting agencies,
c) if NSI data reach a business through an intermediary (e.g. a trade organisation), the business (both data user and data provider in it) might not have been aware what its origin was – namely an NSI.

These cases are among the examples where insight of the nexus between provision of own data to an NSI and use of NSI data of as high-quality as possible for the benefit of the business would not occur.

Use of NSI data itself was further hindered by lack of awareness that existing NSI statistics can be of use for the business, lack of awareness that statistics required by a business exist within an NSI, issues with finding and using/interpreting data, lack of correspondence of NSI data with businesses' internal data, the lack of timeliness of NSI data, and un-met needs for additional (usually more detailed) data.

In reference to especially small businesses, where the competence existing within the business concerns the businesses' trade (rather than administration, statistical analysis, or similar), when discussing businesses' needs for statistics or its use, it might prove useful to make a distinction between simplified use of statistics (e.g. aiming at entrepreneurs in micro businesses) and high-level use of statistics (e.g. aiming at analysts in government, financial institutions and large companies, researchers, specialised consultants etc). For simplified use, simplified action-guiding information could be sufficient: short, easily understandable analyses made for the specific industry that the business is active in, that easily guide action (in contrast to sophisticated fact-based decision making, which would be too far from a micro-business entrepreneur's way of thinking); that should be so simple so as not to distract attention from doing the business ("*if they wanted to go to university, they would have done that*", an expert implied). High-level use would likely need even more statistics in the future, and new/different statistics, for instance better indicators for intangible, currently not measured phenomena. A potentially useful, but thus far not explored, concept is that of *maturity of data-driven decision making* within a business (Bavdaz 2011).

Within the NSIs there was some knowledge on the use of NSI statistics among businesses but it was scattered around the organisation (from customer support service to subject-matter departments, field staff and staff of specialised units), tacit, fragmented and not systematised. In some respects this knowledge was also partial because the NSIs only knew about those uses or issues for which businesses turned to them while they did have no information on the others who might have needed the data but have not contacted the NSI in that respect.

It should also be noted as a methodological hinder for studying business practices and needs regarding NSI statistics that none of the NSIs reported having in place a system for documenting user support requests to individual subject-matter units. A considerable proportion of requests to the central customer support unit in an NSI (roughly about 30%) was relayed to subject-matter units, and thus unavailable for studying.

Yet another area in need of improvement would be communication with the business world. An essential element in communication nowadays is an NSI's website. Dissemination of NSI statistics should be more tailored to businesses' needs. For instance, the four NSIs' web sites could be characterised as organised according to the statistical production and organisational divisions. This will not necessarily be consistent with what businesses need. Further, working towards more accessible, better organised, clearly structured and generally more appealing website that caters for less than perfect statistical and methodological competence of business users is needed. Besides improving general dissemination practices, initiatives to develop specific services for businesses would also be beneficial to businesses as users of NSI statistics. The example of Statistics Netherlands' site dedicated to businesses (CBS, not dated) leads the way but can surely be evaluated and further developed.

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