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Achieving Data Coherence for Complex Enterprises

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Abstract

In Canada, although complex businesses represent less than 1% of the total number of businesses, they contribute more than 45% of the total revenue. Statistics Canada recognized that the quality of the data collected from them is of great importance and has adopted several initiatives to improve the quality. One of the initiatives is the evaluation of the coherence of the data collected from large, complex enterprises. The findings of these recent coherence analyses have been instrumental in identifying areas for improvement. These, once addressed and improved, would be increasing the quality of the data collected from the large, complex enterprises while reducing the response burden imposed on them.

Key Words: Integration, Proactive coherence, Industry allocation.

1. Introduction

Over time, Statistics Canada's approach to gathering and disseminating economic data has evolved into a highly integrated system for collection and estimation, feeding the framework of the Canadian System of National Accounts (CSNA). The Agency redesigned its entire framework for conducting annual business surveys into a single master survey program called the Unified Enterprise Survey (UES). While the UES was created to achieve a number of objectives as part of the Project to Improve Provincial Economic Statistics (PIPES), its general goal was to improve the consistency, coherence, breadth and depth of the business survey data (Brodeur, et al., 2006).

Because the business survey program was to feed the framework of the CSNA, there was a requirement to develop a tool to ensure that the survey program would collect the appropriate variables to measure economic aggregates of output, value-added and other indicators, as delivered by the CSNA. In 2002, Statistics Canada adopted a departmental standard, the Chart of Accounts (Statistics Canada, 2005) to assist with the mapping of the financial variables and to bring its data requests more in line with standard accounting and business reporting practices, improving the content of business questionnaires.

The backbone of the UES was and still is the Business Register (BR), which stores a structured list of businesses engaged in the production of goods and services in Canada. The structure of the enterprises from the top consolidated level down to the production units operating in Canada must be articulated on the BR to ensure consistency between enterprise-based and establishment-based surveys. In Canada, a level of complexity is added because of its mandate to provide information at the provincial level.

The UES was designed to collect more industry and commodity detail at the provincial level than was previously possible while, at the same time, trying to avoid overlap among different survey questionnaires. The UES covers all the major industries in Canada such as manufacturing, wholesale, retail and services. A business survey collecting data about the activities occurring at corporate head offices was also designed. This survey will be addressed further in this paper as it plays an important role in the collection of data from complex enterprises.

Statistics Canada did improve the design and content of some of its business surveys since the implementation of its Chart of Accounts, and did improve the quality of the economic data fed in the CSNA. However, the constantly changing environment of businesses dictates a need to stay current with the new ways in which businesses are

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organizing themselves and operating in the global economy. The processes in confirming survey coverage and in collecting data from the complex enterprises still require refinement.

Over the last couple of years, an analysis was performed for a subset of the largest, most complex Canadian companies that had reported for all of their operating units. Some discrepancies in operating profits were found when comparing profits obtained by summing establishment profits to reported enterprise profits. This analysis indicates that for the largest, most complex enterprises operating in Canada, some concepts should be clarified and that for some of them, the collection strategy should be fine-tuned.

This paper will demonstrate that since the implementation of its UES program, Statistics Canada further adopted several initiatives to improve the accuracy and coherence of collected business data, especially in terms of the complex enterprises. Although the Agency has progressed substantially in terms of collecting data from the largest, most complex companies, it recognizes that there is still more it could accomplish to improve further the quality of the data, in terms of their coherence. This paper will expose the areas for improvement but more importantly, it will present solutions.

2. Initiatives Statistics Canada recently adopted to improve accuracy and coherence of business data collected

2.1 Creation of Enterprise Portfolio Management program

Up until 2005, two separate groups within Statistics Canada would meet with the large, complex enterprises. The profiling exercise of the complex enterprises was performed by the Large Business Profiler (LBUS) group, which was part of the Business Register division. The collection issues with key non-respondents among large, complex enterprises were handled by the Key Provider Manager (KPM) group, which was part of a group of the Enterprise Statistics division.

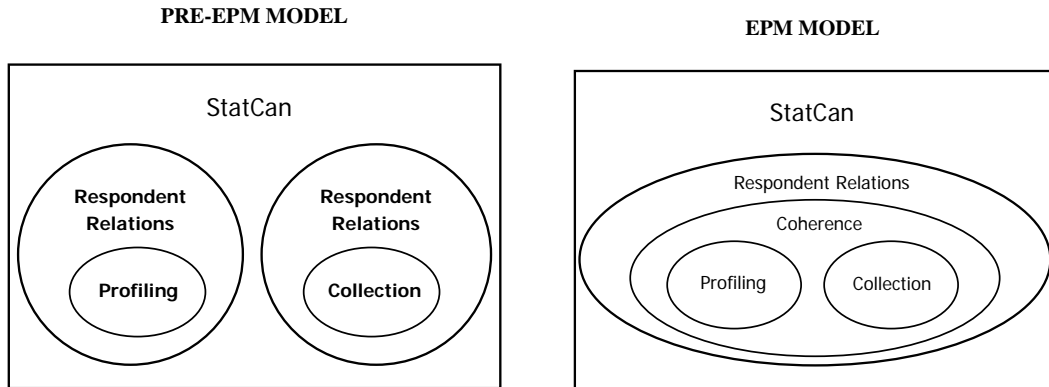
The LBUS would start the profile exercise with an interview, which was based on theoretical concepts. First, the legal structure was addressed, followed by the operating structure, with very little discussion, if any, about the link between the two structures. Then, the Canadian production units were identified and for each, the address, the industry classification, the number of employees, assets and revenues/costs were obtained. Production units were classified as an enterprise, a company, an establishment or a location and depending on the financial data available from each, an accounting type was assigned: investment center, profit center or cost/revenue center. An establishment was referred to as a profit center.

This form of interview assumed that the company was keeping its books by physical production units. Profit centers would be set-up because in theory, profit was generated by these production units. However, in practice, when the time would come to obtain the data from these establishments, the KPM would often be told by the respondents that they could either not provide the data on the operating profit generated at that production unit, or could provide data but such data would not be representative of the establishment unit as defined by Statistics Canada.

It was found that these theoretical profiles often caused incoherence in the data collected because the coverage was not truly linked to the financial data availability. The format the data was made available by several complex enterprises could not accommodate the establishment-based surveys Statistics Canada had designed to meet its requirements.

Recognizing the increased and growing importance of collecting quality data from large businesses, Statistics Canada created in 2005 the Enterprise Portfolio Management (EPM) program (Sear, et al., 2008). The EPM program was to be an evolution by merger of the two former programs, the KPM and the LBUS programs. The EPM was now responsible for profiling as well as for managing the data collection from these businesses. In merging these two functions, collection of coherent data became more probable because profiling was done with coherent data collection in mind.

**Figure 2.1-1
Pre-EPM model and EPM model**

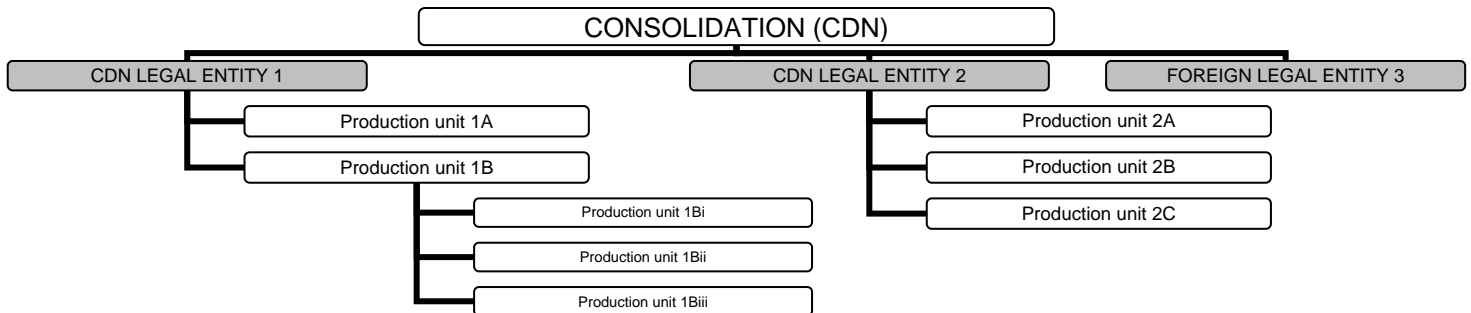


2.2 Integrated operations to legal structure

As mentioned above, when profiling complex enterprises in the past, the legal and operating structures were dealt with separately. In fact, the BR which existed at the time was handling the two structures in two separate databases. Therefore it was possible to update one or the other structure without ensuring the coherence between the two of them. People who conducted enterprise-based surveys devoted their attention to the legal structure since it was the most important component of their program. On the other hand, people conducting establishment-based surveys were concerned with the operating structure and the delineation of every operating entity for a given business. Maintaining two independent structures was inefficient and made it confusing for the business during data collection since it was not always clear which part of their business was of interest to the survey taker.

The new Statistics Canada BR which was launched in 2008 recognizes the necessity of linking the two structures (Ménard, et al., 2008). The integration of the operations to the legal structure is at the basis of the new BR's requirements. It has now become a leading profiling rule to reflect operations under each legal entity. While for the complex enterprises it will allow Statistics Canada to make better use of the tax data in terms of benchmarking, it will make the profiling interview a more hands-on, practical exercise, one with which the respondent can relate better.

**Figure 2.2-1
Example of an integrated structure**



The above integrated structure displays a fictitious Canadian consolidation of two Canadian legal entities (1 and 2) and one foreign legal entity, all legal entities shaded in grey. Note that while the BR will be displaying all these

legal entities, the respondent will be asked to exclude the results of the foreign entity 3 when responding to the enterprise based survey. The Canadian legal entities 1 and 2 will therefore be the parties of the Statistics Canada consolidation. The total operating profit of the Canadian legal entities will therefore have to correspond with the operating profit revealed on the enterprise based Statistics Canada survey.

The structure reflects the production units 1A and 1B under the proper legal entity. The operating profit revealed for the total of these two production units has to correspond with the operating profit of the legal entity 1. The same applies to the production units under the legal entity 2.

In the past, the operating profit collected from the production units 1A, 1B, 2A, 2B and 2C was compared to the profit collected from the enterprise based survey of the legal entities 1 and 2. Now, with the integration of the operations to each legal entity, an additional layer of comparison is possible. The added advantage of having integrated operations by legal entity allows incoherencies to be identified by legal entity before moving to establishment/enterprise incoherencies.

3. Outstanding challenges

3.1 Defining establishments

The CSNA adopted the establishment as the basic observation unit to measure economic production. The establishment combines the locality dimension and the “kind-of-activity” dimension. In the past, it was understood that an establishment was a production unit from which one could obtain value-added (outputs less inputs, or operating profit plus labor and indirect taxes.)

In identifying the production units, profiling the locality and the activity was never and is still not a difficulty. However, the challenges reside with the collection of data from each, allowing the calculation of the value-added. Once again, the findings of the recent coherence analysis performed on a subset of the largest, most complex enterprises are proof of this. Profilers would be “forcing” a production unit to be an establishment because of the fact that a major activity was occurring in the specific physical location, but from which an operating profit was not always available in the company’s books.

While Statistics Canada is very much industry oriented, businesses are not necessarily so. Their organizational and corporate structures and their financial systems are not revolving around industry reporting. As most companies do not account for their financial performance by physical establishment or by production unit as defined by Statistics Canada, it may be quite a challenge to attempt to collect data by establishment. Companies will account for their financial performance to respond to their own requirements, i.e., by division (geographical or functional), by type of good/service or by class of customer.

When the Canadian economy was focused more on the manufacturing activity, linking production to a physical location was easier than it is now. In the past, “separate set of books” were often kept by physical location. Operating profit was commonly available from the plant manager or the office manager. The Canadian economy has since evolved to being more knowledge-based, where outsourcing and offshoring are noticeable trends. The supply chain distribution models have been forced to become more cost effective, and the companies now expand beyond the Canadian market. While Statistics Canada’s requirements for industrial and provincial data (therefore establishment based data) has not changed, the business world has evolved and the way it keeps its books has progressed to better meet its own growing requirements.

As mentioned above, defining the establishment to collect data by industry presents several challenges. The most current challenge resides with the splitting of the manufacturing and wholesaling industries. One will argue that all manufactures sell their products. However, these companies may not keep their books in such a fashion that will allow Statistics Canada to get a proper split between the manufacturing and the wholesaling activities. The results of the analysis performed on the coherence of the data collected from some large Canadian manufacturers reveal some incoherencies in the data collected from them. If, in its accounting system, the company does not transfer its

manufactured goods to its sales division, all the profit will remain in the manufacture industry, and it will be quite difficult for the respondent to provide separate data for these two industries. Relying on the company's accounting system to delineate the manufacturing and wholesaling activities can be very challenging. No two companies account for sales between their divisions the same way, and no two structure their corporate affairs quite the same way. Because Statistics Canada's requirements will not be changing, profiling procedures have to be reviewed to ensure that, despite the diversity in the accounting and corporate structures existing in the business world, all enterprises are profiled consistently and correctly.

3.2 Measuring transactions between establishments

An acceptable measure of profit exists only if establishments transact amongst themselves at fair market value. However, previous profiling procedures required a production unit to be set-up as an establishment, therefore a profit center, even if it transacted at cost with another production unit. The effect of such a practice would be that the profit would be fully declared in the second production unit, and the first one showing no profit at all.

One could argue that relying on the company's own internal strategy to create competition between divisions and to increase performance is not an acceptable measure for Statistics Canada's purposes as it does not necessarily represent the market equivalent, or a fair production indicator. Again, profiling procedures have to be re-visited to ensure proper and consistent treatment in measuring the transactions performed between establishments, within an enterprise.

3.3 Measuring production occurring at "head offices"

As our Canadian economy is evolving from being manufacturing based to service based, the Canadian head offices are getting involved in a lot more activities than it did in the past. While their role is still to support the major activities of the enterprise by offering accounting, legal, human resources, administrative and IT support, they may also get involved in revenue generating activities such as outsourcing, offshoring, franchising and research and development activities.

There are challenges in collecting data from head offices. Currently, Statistics Canada profiles insufficient information on the revenue generating activities occurring there. Also, because the corporate and administrative expenses are more often than not allocated to the enterprise's establishments, collection of these expenses is not an easy, straightforward process. The profiling procedures and collection process need to be updated to address the particularities of the production occurring at these "cost centers", including the head offices.

4. Proposed solutions

4.1 Profiling with collection of coherent data in mind

4.1.1 Proactive coherence

When respondents are made aware that Statistics Canada will be analyzing the data collected to verify its coherence, they pay more attention to the accuracy of the data provided. They also ensure that the mappings of their general ledger accounts to Statistics Canada's survey variables are kept up-to-date.

In making data coherence a priority and becoming proactive in presenting this to the respondent, Statistics Canada increases its chances of achieving its objective. During the profiling exercise, the EPM should inform the respondent that the data collected will be verified for coherence. The profiling activity then becomes a more effective exercise. Statistics Canada gains credibility with the respondents who are usually accountants. The accountants, who are trained professionally to ensure data coherence, are always comfortable with this concept. They easily grasp that conceptually the establishment defining activity has to result in a collection of coherent data.

4.1.2 Updated profiling procedures

If profiling is to result in a collection of coherent data, it will be important to update some profiling procedures. Most importantly, profilers have to be aware that many large, complex companies do not keep their books by physical establishment. Focus will have to be put on understanding how the companies account for their profit. Determining the company's "true profit centers" should then be the most important step in the assignment of the accounting type of its production units. This would lead the profiler in successfully understanding the transactions occurring between the company's establishments. Finally, profiling of the activities occurring at the head office has to be updated to successfully measure the revenue generating activities and to understand the company's allocation process of its support functions.

4.1.2.1 Determination of company's "true profit centers"

Once the physical locations are identified by legal entity and that for each the address, the activity and the number of employees working there are gathered, the profiler should then refrain at that point from asking the respondent about the accounting type for each of the locations, as this assumes that the accounting is done by physical location. What needs to be done at this point is to discuss how the company accounts for its operating profit to ensure proper accounting type is assigned to every production unit.

The research performed prior to the profiling visit often will reveal pertinent information on this topic. Examining the data reported by the enterprise at the establishment level (for example on the annual survey of manufacturers or the head office survey) will provide important clues on how the company accounts for its operating profit. The full coherence analysis where establishment data is compared to tax data and tax data compared to enterprise data is also insightful. Finally, when available, an important signal is found in the company's annual report, where it is asked to report its performance results by segment.

With this information well understood before meeting the respondent, the profiler is in a better position to confirm with the respondent the company's "true profit centers" and assign the proper accounting type to every production unit.

4.1.2.2 Understanding the transactions between establishments

The transactions between establishments have to be well understood by Statistics Canada to ensure that the collection at the establishment level agrees with the grossed-up data collected at the enterprise level. During the profiling exercise, the respondent should be given the opportunity to explain how the productivity of every activity is accounted for and how one division transacts with the other. By adding up the operating revenue of each activity, and netting out the inter-corporate transactions, it will become very obvious if pieces are missing or if there is misunderstanding on the part of Statistics Canada. When this exercise is performed in the presence of the respondent, it becomes evident to her/him that coherence is expected when the survey data comes in. It also is evident to the Statistics Canada representative that the profile which will be logged on the BR reflects how the company accounts for its activities.

When transactions between establishments are performed by the company at fair market value, these establishments are then "true profit centers", and the companies can easily report their data on Statistics Canada's establishment surveys. However, when these transactions are valued at cost or worse, where there are no real transactions on the company's books between physical establishments that produce different industrial activities, these companies need to be flagged as such, and will not be able to report establishment data in a coherent fashion. These would be our so-called "allocation candidates" discussed in section 4.2 below.

4.1.2.3 Understanding the activities occurring at the corporate, head office

Collecting data from a corporate, head office, presents several challenges. When profiling a head office, more information has to be gathered beyond the number of employees physically working there. A discussion with the respondent about the activities occurring at the head office has to happen. Most importantly, delineation between

the support functions and the revenue generating ones has to be made. Understanding the enterprise's expense allocation process would clarify this delineation as companies allocate the expenses for the support functions, and account for the revenue generating functions in separate responsibility or profit centers.

4.2 Industry allocation

If the company's format from which data is made available does not meet Statistics Canada's requirements, rather than forcing establishments on the company to meet industry reporting, industry allocation should be performed at Statistics Canada. "Allocation candidates" would be companies whose "true profit centers" cover more than one industry. These companies usually do not account for transactions between establishments, or if they do, do not account for them at fair market value. Allocation candidates would also be those companies where the support function expenses are fully or partially allocated to the establishments, making the head office production calculation inaccurate otherwise.

At the time of writing this paper, the industry allocation process was being tested. If this method provides acceptable industry results while guaranteeing coherence, it could be applied manually to the data received from companies being tested who currently cannot report to existing establishment/industry based surveys. It will also be proposed that Statistics Canada proceed with the automation of the process. As ESD is planning a redesign of its UES program to improve its effectiveness, the automation of the industry allocation process should be part of the redesign and be adopted. Inevitably, this process would reduce the burden on the respondent, would simplify business data collection at Statistics Canada and would most certainly increase the quality of the data for the large, complex enterprises.

5. Conclusions

Statistics Canada has implemented leading edge initiatives in terms of its dealings with the large, complex enterprises. While it has progressed substantially, it has found areas for improvement. Its latest results from the performance of the coherence analysis, comparing enterprise based to establishment based financial data have been instrumental in implementing changes to the profiling process and in proposing an industry allocation. While globalization does not make collection of business data any simpler, Statistics Canada can only gain by profiling these complex enterprises with the collection of coherent data in mind. It can also gain by focusing its efforts in collecting business data that are readily available and that are linked to the agency requirements, and by finding more efficient means to address the unmet requirements. These two major focuses can only result in producing economic statistics of better quality while reducing the burden on the respondents.

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