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IMPLEMENTATION OF THE MODEL SURVEY OF COMPUTER SERVICES

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IMPLEMENTATION OF THE MODEL SURVEY OF COMPUTER SERVICES

INTRODUCTION

1. At the 1991 Voorburg Group meeting, Australia agreed to
   a) bring together into one paper all the information available on country experiences with the model survey of computer services; and
   b) compile a range of statistics from Voorburg Group member countries on the composition and structure of the computer services industry.

2. This paper meets the first commitment, and is based on papers prepared for various Voorburg Group meetings. Participating countries are invited to supplement the information contained herein.

3. Statistical agencies have been asked to complete a short questionnaire on the computer services industry in their country. The data from these questionnaires will be summarised in a separate paper to be submitted to this meeting of the Voorburg Group.

Treatment of computer services in both ISIC and the CPC

4. To fully appreciate the context of the model survey of computer services, it is useful to firstly consider the scope of the computer services industry and the goods and services it produces.

5. The computer services industry is defined in the International Standard Industrial Classification of All Economic Activities (ISIC) as Division 72 *Computer and related activities*. The division consists of the following classes:

7210 *Hardware consultancy*
This class includes: consultancy on type and configuration of hardware with or without associated software application.
This class excludes: similar activities carried out by computer retailers.

7220 *Software consultancy and supply*
This class includes: activities in connection with analysis, design and programming of systems ready to use. Simple writing of programs following consultation with the user is also included.
This class excludes: reproduction of non-customised software, and similar activities carried out as an integral part of the reselling of software.

7230 *Data processing*
This class includes: processing or tabulation of all types of data, and the management and operation of data processing facilities of others on a continuing basis.

7240 *Data base activities*
This class includes: data base development or assembly, data base storage, and data base availability.
This class excludes: computerised documentation activities provided by archives and libraries.

7250 *Maintenance and repair of office, accounting and computing machinery*
This class includes: maintenance and repair of office and accounting machinery and of computers and computer peripheral equipment.

7290 *Other computer related activities*
This class includes: other computer related activities not elsewhere classified.

6. The Central Product Classification (CPC) lists a range of goods and services which comprise the output of businesses in this field. These are:

841 *Consultancy services related to the installation of computer hardware*

842 *Software consulting and supply services*
- 8421 *Systems and software consulting services*
- 8422 *Systems analysis services*
- 8423 *Systems design services*
- 8424 *Programming services*
- 8425 *Systems maintenance services*

843 *Data processing services*
- 8431 *Input preparation services*
- 8432 *Data processing and tabulation services*
- 8433 *Time sharing services*
- 8439 *Other data processing services*

844 *Data base services*

845 *Maintenance and repair services of office, accounting and computing machinery*

849 *Other computer services*
- 8491 *Data preparation services*
- 8499 *Other computing services*

7. Due to the rapid evolution of the computer services industry, there is interest in testing the product classification used in the model survey. In the model survey, the CPC categories given in the previous paragraph have been adapted to derive product groups that are considered to be more appropriate for data collection.

841 *Packaged software products (own design)*
- *Systems and user tools software*
- *Application software*

842 *Professional computer services*
- *Consultancy related to the installation of hardware*
- *Systems and technical consulting*
- *Custom software development*
- *Programming services*
- *Computer facilities management services*
- *Systems maintenance*
- *Other professional computer services*

843 *Computer processing services*
- *Data processing and tabulation services*
- *Data entry services*
- *Other computer processing services*

844 *Data base services*

845 *Computer repair and maintenance services*

849 *Other computer services*

The structure of the model survey of computer services

8. The model survey approved by the Voorburg Group in 1990 takes the form of eleven modules. These modules are:

1 Revenues from the sale of goods and services
- 1.1 Revenues from the sale of computer services
- 1.2 Revenues from the sale of computer-related goods and services
- 1.3 Revenues from other sources

2 Goods and services used in the operation

3 Purchases of goods and services for resale

4 Inventories

5 Supplementary questions concerning the basis of accounting

6 Exports
- 6.1 Computer services
- 6.2 Computer-related goods and services

7 Imports
- 7.1 Computer services
- 7.2 Computer-related goods and services

8 Supplementary questions regarding packaged software product revenues

9 Employment

10 Fixed assets, additions and disposals

11 Software research and development

9. The application of these modules as a single collection vehicle is not intended. The target population varies according to each module and question. The extent of adoption of model survey questions is left to the discretion of statistical offices participating in the survey. Questionnaire design and collection strategy should therefore take into consideration the existing survey infrastructure of the participating agency, as well as standard survey issues, such as respondent load.

Countries implementing the model survey of computer services

10. Based on papers submitted to the Voorburg Group over the past few years, it appears that Statistics Canada, Institut National de la Statistique et des Etudes Economiques (INSEE), Statistics Sweden, and the New Zealand Department of Statistics (NZDOS) have conducted surveys of the computer services industry which broadly follow the outline of the model survey. These countries' experiences form the basis for the remainder of this paper. A number of other countries have conducted independent collections from the computer services industry and participants from those countries are asked to supplement this paper with their observations.

IMPLEMENTATION OF THE MODEL SURVEY OF COMPUTER SERVICES

MODULE 1: *Revenues from the sale of goods and services*

11. This module seeks to disaggregate revenue earned from computer services into groupings which are broadly aligned with the CPC.

12. In Canada, data for this module is collected in the Annual Survey of Software Development and Computer Services. This survey collects income and expenditure items and provides information on production, sales, exports and other related data items. Units surveyed are corporate tax filers coded to ISIC categories 721 *Hardware consultancy*, 722 *Software consultancy and supply*, 723 *Data processing*, 729 *Other computer related activities* and parts of ISIC categories 725 *Maintenance and repair of office, accounting and computing machinery* and 7123 *Renting of office machinery and equipment (including computers)*. Some large unincorporated entities are also included. While small companies, incorporated or not, are not surveyed, they are included in industry estimates.

13. Responses indicated that there are only a very few large companies in Canada which generate most of their revenue from *packaged software products (own design)* (CPC 841). The industry is generally characterised by a large number of small to medium sized businesses. The questionnaire intentionally requests revenues earned to avoid confusion as to whether software is sold, rented or licensed. As Statistics Canada do not ask for royalties to be kept distinct from sales, the results from this category are expected to contain a royalty component. If this distinction were to be made, this information could be used to gain insight into the means used by software developers to market their products.

14. Responses for the detailed categories of *professional computer services* (CPC 842) were obtained with relatively few problems. Despite the fact that the requested data is not always readily available from businesses' accounts, most respondents agree to do the necessary work to provide estimates. In particular, most systems integrators are able to separate revenues between computer hardware sales and professional computer services.

15. *Computer processing services* (CPC 843) was a difficult category to interpret and apply when it was first introduced into the survey. Statistics Canada contend that the general use of computer equipment in the provision of diverse services, as well as the ambiguity of the term 'processing', have contributed to misunderstandings among respondents. In order to more clearly delimit the category, the following criteria are used:

a) the essence of the service is to provide the use of computer equipment and software for different applications; and
b) the client determines the application, the supplier provides only the means.

16. In this way, Statistics Canada screen out services - such as market research services - in which data processing is an important component, but does not represent the intrinsic nature of the service. In cases where these principles could not be effectively applied to respondents, detailed information on activities was carefully analysed to classify businesses accurately to industry and their services to the correct categories within the CPC.

17. Interpretation problems were also encountered with the *data base services* (CPC 844) category - even though the corresponding ISIC is excluded from the scope of the Annual Survey of Software Development and Computer Services. Some respondents were not clear on the difference between this category and the computer (shared) processing category. It was found that the expressions 'on-line

information retrieval services' and 'network services - electronic information systems' better convey the intended meaning of the category. Statistics Canada also found that in order to achieve a high level of coverage for this category it is necessary to survey various types of businesses, particularly

a) data base vendors;
b) computer service bureaux (who often provide on-line information retrieval as a secondary activity); and
c) subsidiaries of large organisations (who specialise in the provision of these and related services to related parties).

18. In Canada, there are few organisations whose main source of revenue is derived from the provision of *computer repair and maintenance services* (CPC 845). Results indicated that it is the wholesalers of computer equipment who are generally involved in these activities.

19. Statistics Canada were wary of the dangers of including revenues from software development firms in the *services to related parties* category. The distinction between the service provided and the nature of payment (sale, rental, royalty, development charges to subsidiary) is important.

20. Data is not collected for the items *royalties and patent fees received* and *operating subsidies*, although royalties are included with sales of software in CPC 841.

21. While the 1989 French survey on the computer service industry was designed prior to the circulation of Statistics Canada's model survey proposal, the 1990 survey took into account many of the model survey proposals. However, slight differences exist at the product classification level. INSEE use an *ad hoc* classification consistent with Nomenclature des Activites et Produits de 1973 (NAP 73).

22. Two different questionnaires were used. A more detailed form was sent to larger enterprises (with at least 20 employees), and a simplified questionnaire went to a representative sample of smaller enterprises. Units predominantly engaged in providing data base management services were considered to be out of scope of the survey.

23. From the French system of surveys on enterprises, it is possible to obtain an aggregated breakdown of computer services sold by enterprises not predominantly engaged in this activity. For this purpose, INSEE use the sectors-to-products transfer method.[1]

24. Data was not collected for the item *systems and user tools software* in the *packaged software products (own design)* (CPC 841) category. This activity is mainly provided by computer manufacturers. INSEE collected data on *application software* in accordance with the model survey. Care needs to be taken, however, with revenue earned from the maintenance of application software by a third party: this revenue should be included under *systems maintenance* in CPC 842.

25. The major issues relating to *professional computer services* (CPC 842) concern the two categories of services covered by systems engineering services:

a) the custom made conception of computer systems according to terms of contract. INSEE request data separately for conception (or technical advice) and materials and installation purchased by the turnkey systems vendor in carrying out this service. Purchase of materials and installation is included under the item *hardware sales (purchases for resale)* in section 2 of module 1. Regardless of the ratio of sales to systems analysis or other computer services, INSEE consider this activity to be a computer service.

b) the systems integrators, or value added resellers. Depending on whether advice is included in their value added, these enterprises are classified either as service providers or as traders, according to the relative weight of the two activities. It is, however, common practice for traders to provide a small amount of advice to customers. This particularly applies to wholesale dealers who sell the same product to many clients.

26. In the French survey, systems analysis and programming services and custom software development services are collected in the one item. INSEE also separate computer facilities management services and computer operations management services. It may be, however, that the latter should be included in *data processing and tabulation services* in CPC 843. INSEE have included revenues from the provision of computer services personnel in the *other professional computer services* category in CPC 842.

27. Collection of data for *computer processing services* (CPC 843) conforms with the model.

28. *Data base services* (CPC 844) refer only to the management of data banks. As mentioned earlier, data bank management services were considered to be out of scope, and were treated as telecommunication services.

29. As with Statistics Canada's experience of *computer repair and maintenance services* (CPC 845), INSEE reported low revenues for this category. This service is believed to be mainly performed by computer manufacturers.

30. Respondents who entered revenue under the residual *other computer services* (CPC 849) category poorly specified the products concerned.

31. In section 2 of module 1, INSEE have a broader *packaged software (resold)* item, as it incorporates retail sales of application softwares and personal computers. *Computer hardware sales (resold)* includes sales of documents and computer supplies; wholesale sales of mainframes, equipments and microcomputers; and, as discussed earlier, materials and installation in the case of systems engineering services.

32. *Royalties and patent fees* received were only collected for enterprises with 20 or more salaried employees. Similarly, information on *operating subsidies* is available exclusively for these enterprises. The majority (about 66%) of subsidies were reported by enterprises with at least 100 wage earners. An assumption was made that enterprises with less than 20 paid workers did not receive any subsidy. Among other issues arising in section 3 was the use of different nomenclature - *ancillary services provided to enterprises in the group* - to describe the item *services to related parties not included above.*

33. Statistics Sweden have conducted four surveys of the computer services industry, with the most recent being in respect of 1990. This was a sample survey covering 350 enterprises out of a population of approximately 5000 computer services enterprises. Every enterprise with more than 50 employees was included. The very smallest enterprises were excluded, with their contribution being estimated for by using VAT information. Other businesses were sampled.

34. The Swedish experience is that having a large group of alternatives was suitable to respondents as it made it easier for them to allocate their revenues. This minimised the amount reported in the other revenues categories. Statistics Sweden did not, however, try to collect sub-totals for each of the CPC categories, to keep down respondent load.

35. Statistics Sweden also collect data about the revenue earned by category of customer in percentage terms.

36. The pilot tests conducted by NZDOS have been run in conjunction with their Annual Enterprise Survey. This survey collects the broad categories of income and expense data, which are further dissected in the computer services industry inquiry.

37. About 10% of all respondents had difficulties in providing the detailed data. Most of these were medium and large sized firms. Very small firms tended to experience fewer problems, mainly because they only provide one type of service.

38. A significant number of respondents reported sales of a group of the individual services listed in the pilot test questionnaire. As an example, one sale might include hardware, software, training, maintenance and upgrades. Only occasionally were dollar values reported for each component. This one sale covers a number of NZDOS's individual questions. All estimated revenue values were included under the relevant item. Income from enterprises who failed to split according to services performed were processed into a systems integrators category.

39. The principal areas where systems integrators had difficulty in separately identifying revenues were between *systems and technical consulting services*, *custom software development services* and *systems analysis and programming services* (CPC 842). There were also problems with separating *data processing and tabulation services* and *data entry services* (CPC 843), as well as *packaged software sales (resold)* and *computer hardware sales (resold)* from section 2 of the model survey.

40. To resolve the issue of income data separation, NZDOS believe the questionnaire could be modified by

a) collapsing CPC codes in section 1 to a level where systems integrators have only one income code to complete; or
b) add a special item to existing CPC codes to cover the output of systems integrators.

41. However, while option a) eases respondent load, it does not provide data on the component parts of systems integration contracts. In addition, this option would not allow for the provision of sufficient information to assist in the accurate classification of units according to their predominant activity. Option b) would also be less burdensome for respondents. The overriding problem with taking this line is that CPC data would be effectively rendered invalid due to the revenues from mixed services collected under the systems integrators item.

42. The questionnaire used in the 1990-91 survey conducted by NZDOS allowed respondents to either supply detailed data in dollar terms or as a percentage. About 30% of respondents used the option to supply percentages. NZDOS expects to continue to offer both options in future surveys.

MODULE 2: *Goods and services used in the operations*

43. This module seeks data on the expenses incurred as part of the regular operations of this industry. There are 18 items included in the disaggregations.

44. The Canadian experience is that the distribution of expenses varies only marginally over time. Furthermore, respondents show some reluctance to provide this data as it allows the derivation of profit margins. Hence Statistics Canada

considers that there may be a strategic advantage in collecting the detailed data on goods and services used less frequently. This would reduce respondent load, as businesses often need to reorganise their accounts in order to reply to these questions.

45. In France, expenses data is collected at an aggregated level consistent with the French accounting framework.

46. Statistics Sweden collected only a four way dissection of the goods and services used by enterprises. This was done to reduce respondent load.

47. New Zealand's pilot test showed that they would be able to provide some disaggregation of expense items, but not to the degree requested in the model survey.

MODULE 3: *Purchases of goods and services for resale*

48. Information on purchases of goods and services for resale is sought in this module. Data is to be reported within four broad categories.

49. Statistics Canada collects data for three categories and has encountered no problems with this approach. These data have been useful for classifying organisations to their correct industry, particularly with regard to distinguishing between the computer services industry and the retail and wholesale industry.

50. In France, data was not collected within the four categories specified. Purchases of *packaged software products* for resale were not collected separately. The only element of *computer services* kept distinct was subcontracting of services included in products which are sold. *Packaged software products* and the remainder of *computer services* were grouped under the residual purchases item.

51. Both INSEE and Statistics Sweden collect purchases for resale as part of the expenses data in module 2.

52. Respondents in the New Zealand pilot test had problems in attempting to differentiate the value of purchases between items. Data for the categories *computer hardware* and *other goods and services* were particularly affected by these difficulties.

MODULE 4: *Inventories*

53. The inventories questions request data on opening and closing stocks classified by three different categories.

54. Canada does not collect inventories data from the computer services industry because it is thought to be too small. It does, however, collect it in the Annual Survey of Wholesale Trade.

55. Opening and closing inventories were not required in INSEE's computer services questionnaire. Only changes in the level were dealt with.

56. In France, both goods purchased for resale and goods purchased for use in the operation conform with the Canadian model survey. The item other inventories included finished products not yet invoiced.

57. The Swedish survey did not obtain inventories data in this collection; rather it was derived from other statistical collections.

MODULE 5: *Supplementary question concerning the basis of accounting*

58. This module seeks information on whether accruals or payments methods of accounting are used.

59. Statistics Canada have not implemented this module as they are satisfied that the accrual basis of accounting is generally practised.

60. The standard accounting framework which operates in France specifies that accounts be kept on an accrual basis. This makes the questions unnecessary for INSEE's purposes.

61. Statistics Sweden do not collect any information on the accounting methods used. They feel that this module is unnecessary.

MODULE 6: *Exports*

62. In this module data is sought on a disaggregation of the exports of businesses in the industry. The disaggregation is consistent with module 1; but at a broader level.

63. Some problems were experienced in implementing the export module in Canada. Subsidiaries of foreign firms sometimes reported sales of the foreign parent, and firms with foreign subsidiaries tended to supply consolidated earnings. Statistics Canada detect these problems by including a question which asks the company to separate sales data for foreign organisations and those of its affiliates. Information acquired from this question not only helps to detect reporting errors, but is useful to monitor the expansion of firms into foreign markets. International expansion is not adequately measured by export data.

64. In France, only the total value of exports is collected rather than asking for revenue by detailed product breakdown. This detail is estimated by utilising the information obtained in module 1.

65. Statistics Sweden have not implemented this module as exports of Swedish computers and software are insignificant.

66. Twenty-one respondents returned data for the export questions in the New Zealand pilot test. (It should be noted that a significant percentage of the total export figure was supplied by one respondent.)

67. The difficulties encountered in New Zealand were:
   a) where to include the export of software development (i.e. should it be in *professional computer services*, or *other computer services*, or should it be made into a separate item)?
   b) Some enterprises export via a third party.
   c) Other enterprises reported exports of training services, and development fees.
   d) Some enterprises provide a package of services which cross the boundaries of several items. This again indicates the systems integrators problem.

68. New Zealand was also able to compare its pilot test results with data collected in the Balance of Payments International Trade in Services and Royalties Survey.

69. For NZDOS's purposes, this comparison illustrated that
   a) the computer services questionnaire has the potential to collect data on imports and exports of services; and
   b) improved questionnaire design - incorporating better guides for respondents - will ensure the separation of data for services and goods.

It should also be noted that the computer services population (ISIC classes 7210-7240) may provide more comprehensive import/export statistics than gathered from the ITS population, because the latter population is based on a filter question in the annual business directory update survey. Errors in this question may limit the population and lead to the omission of some data.

MODULE 7: *Imports*

70. In this module, data is sought on the imports of computer related goods and services in similar categories as for module 6 on exports.

71. Both Statistics Canada and NZDOS had difficulties in obtaining adequate levels of coverage. To obtain complete coverage, imports questions need to be addressed to all computer services importers. It appears that data from various sources would have to be used as a fallback in the absence of a comprehensive survey.

72. Amongst other difficulties with measuring the imports of computer services is the means of payment for the import of software. This can take two forms:
   a) packaged software has the attributes of a good and can be sent internationally in return for direct payment. In this case, the transaction can be measured as part of merchandise trade. In Canada, it is an item which has been added to the harmonised commodity description and coding system. As part of their merchandise trade figures, Statistics Canada are now compiling data for this item.
   b) Royalty payments can be made to a foreign country for the right to use or distribute software. Statistics Canada presently collect data relating to this type of transaction as part of a general category called royalties for their balance of payments statistics. A more elaborate classification of services is needed to be implemented in the Trade in Services survey used to compile these statistics. Until such a time, it will not be possible to measure the import of this service by isolating royalties paid for the import of software.

73. An estimate of payments (other than royalties) to other countries is made in Statistics Canada's balance of payments statistics. Examination of firms reporting in the Trade in Services survey, from which balance of payments figures are compiled, indicates that most are Canadian subsidiaries of US multinationals. These subsidiaries are neither software nor computer companies. This suggests that those transactions are payments to finance such firms' computer networks. Viewed in this light, the payments could be seen as being for *computer processing services*, or to some extent *data base services*. These transactions, however, represent a relatively small proportion of the total imports of computer services. Software is the main good imported.

74. In 1988, Statistics Canada took the approach of surveying importers directly in order to measure the imports of software products. Following this experience, it was decided to identify software products as a distinct category for collection as part of merchandise trade statistics. Given that software is imported by companies outside the computer services industry, and since the wholesalers of computer equipment and software industry includes almost all the significant importers of software products, it was seen as expeditious for Statistics Canada to send a supplementary questionnaire to them enquiring after details on the nature of software purchased for resale. From the results of this survey, imports by Canadian subsidiaries of foreign software companies, Canadian subsidiaries of foreign computer manufacturers, and other wholesalers could be separated. The supplementary survey was useful in improving coverage, but still left uncovered imported software not handled by these wholesalers. Statistics Canada believe it remains to be seen whether adequate statistics on imported software can be obtained through merchandise trade statistics.

75. Neither INSEE nor Statistics Sweden have implemented this module.

MODULE 8: *Supplementary questions regarding packaged software revenues*

76. The questions in this module seek more detail on the revenue earned from packaged software sales. Only Statistics Canada have implemented the module.

77. Module 8 has proven important in distinguishing the sale of software of own design from the sale of software designed by other enterprises. It also assists in identifying the country of origin of software developed elsewhere. The value of this information is increased when linked with data collected from software wholesalers, giving a holistic picture of the domestic packaged software products market.

MODULE 9: *Employment numbers*

78. In this module, data is requested on the number of people employed, cross-classified by a number of characteristics.

79. This module is only partially satisfied by Statistics Canada's Annual Survey of Software and Computer Services. Full and part-time employment numbers are collected, however breakdowns by sex or occupational class are not requested. Statistics classified by sex are collected in the census of population.

80. INSEE collect employment numbers only. Disaggregates between computing and other personnel, and between male and female wage earners, must be obtained from other sources. An estimated gender breakdown is made for non-wage earners.

This estimate is believed to be 'fragile', and will be reviewed following the results of the 1990 population census.

81. The only disaggregation collected by Statistics Sweden is between working proprietors and paid employees.

82. Results from the New Zealand pilot test showed that there were no significant difficulties with these questions. NZDOS however noted that:

a) respondents were capable of splitting staff between *computing* and *other*.
b) One respondent reported no employment data as all work was contracted out. Contractors may play a significant role in the industry, providing computer services to other computer services firms. Double counting with the employment question could be avoided by including an instruction to exclude 'contractors/employees of other businesses'.
c) The question may be improved by adding a 'predominant' caveat to the computing question - *viz* 'predominantly engaged in computing'. It is recognised that some of the workforce will be involved in both computing and other tasks, such as sales or administration.

MODULE 10: *Fixed assets, additions and disposals*

83. The acquisition and disposal of fixed assets, together with the closing book value of these assets, is sought in module 10.

84. This module has not yet been implemented in Canada. Computer services businesses are not sufficiently well represented in the Canadian Capital Expenditure Survey sample to produce separate information for the industry.

85. In France, annual investments are the only available component of this module. The French system of investment classification is felt to be outdated, and has been recommended for redrafting along the lines proposed in the model survey.

86. INSEE does not have any disaggregation by product of the book value of the fixed assets.

87. Statistics Sweden collected data on the investment in new buildings and equipment (either purchased or leased) and the sales of equipment in both their 1985 and 1988 surveys. In the 1989 and 1990 surveys, expenditure for the education of staff was also collected as part of this module.

MODULE 11: *Software research and development*

88. More detailed information on software R&D is asked for in this module.

89. In Canada the data is obtained from Statistics Canada's Research and Development survey. This survey collects information on the resources committed to research and development. The proportion of research and development resources allocated to software is requested. All research and development performers across Canadian industries - including the computer services sector - are covered by the survey.

90. Questions in the survey which deal with the composition of research and development expenses (salaries, land, buildings, and equipment) adequately cover the elements of the model survey module.

91. Statistics Canada have observed that while their research and development survey requests information on the type of R&D service performed (basic, new processes, new products, etc.) it does not identify the final use of the resulting software. Distinguishing whether the product is for internal use, for embedding within another product, or to be marketed itself, would permit a more complete identification of developers of marketed software. The extent of software development as a secondary activity could then be determined.

92. Statistics Sweden do not collect data on software research and development.

93. Through operating its 1990 Research and Development Survey, NZDOS discovered that the most difficult area of R&D to define related to software. NZDOS concluded that the lack of a detailed definition of software R&D in the computer services pilot test contributed to respondents overstating this activity when compared with the Research and Development Survey results.

94. Accordingly, NZDOS propose to discontinue the R&D module of the model survey. The specialised R&D survey is considered to be the superior vehicle for the collection of high quality R&D data, given that it defines computer services R&D and is processed by staff with a sound knowledge of R&D activities.

CONCLUSION

95. The major conclusion to be drawn from the earlier discussion is that it is possible to set up a model survey, and that the one which has been trialled is a good starting point. However, the experiences of different countries suggest that some of the modules will need revising. These areas are highlighted in the next section of this paper. There are also some areas where it may be desirable to recommend to appropriate authorities that the international classifications be reviewed. These are included in the next section as well.

POINTS FOR DISCUSSION

Scope of the survey

96. The computer industry world wide is characterised by a few large corporations which manufacture, sell and service computer hardware. These corporations operate in many countries; in some they will undertake all these functions; in others they will only undertake a distribution and service function. These corporations may also provide a lot of software to be used on this hardware. In addition, there are a range of smaller companies which also manufacture and distribute computer hardware, software and peripherals. Within the computer services industry itself there are a large number of generally small companies which provide computing services of various types.

97. To study the computer services industry by itself, as defined in ISIC, would only give an incomplete picture of the computing industry in a country. It is therefore recommended that surveys of the computer services industry should include a study of the relevant parts of the manufacturing and distribution sectors of the economy.

98. Furthermore, the computer industry itself is only a part - albeit a major part - of the information technology sector. The rapidly increasing importance of this sector to the economies of the world indicates that it should be studied and surveyed as one entity. This leads to the suggestion that the scope of the surveys should be broadened even further to include the other information technology activities, most notably the telecommunications industry. It is, of course, debatable how far the scope should be widened. Some definitions of the information technology sector would include activities such as training and education while others go even as far as including the information itself. It would, however, seem to be sensible to take a fairly tight definition, at least in the first instance, to ensure that some statistics are forthcoming. Hence we would recommend that the definition of the information technology sector be limited to the computing industry - including those relevant parts of the manufacturing and distribution industries - and the telecommunications industry.

99. The information technology environment is changing rapidly; hence the analyst will find it difficult to compare statistics over time and between countries. This, however, should not stop statisticians from trying to measure the structure and performance of the industry.

Changes to ISIC

100. Given that the repair and maintenance activity mainly occurs as secondary activity in other industrial sectors, such as manufacturing and wholesaling, it may be more desirable to specify these activities as primary to one of these sectors.

[refer paragraphs 18, 29]

101. There may be a need to redefine or respecify the activities covered by ISIC 7240 *Data base activities*. INSEE treated data bank management services as primary to telecommunication services, and Statistics Canada encountered difficulties in differentiating between some activities. Statistics Canada also found it necessary to approach businesses coded to other industries to enable it to obtain a good coverage of the activities primary to this class.

[refer paragraphs 17, 28]
[see also paragraphs 103 and 110 below]

Changes to the CPC

102. The CPC should be amended to reflect the product classification used in the model survey.

[refer paragraph 7]

103. It was found that 'on-line information retrieval services' and 'network services - electronic information systems' were widely understood to more accurately convey the meaning of CPC 844 *Data base services*. Adopting either or both of these expressions in the CPC - if not in the ISIC - along with reviewing the scope of the class as it now stands, may solve these interpretational problems.

[refer paragraph 17]

104. As referred to above (in paragraph 100), the tendency for repair and maintenance activities to associate with other industrial sectors (such as manufacturing and wholesale), indicates that the treatment of these activities in the CPC should be reassessed.

[refer paragraphs 18, 29]

Changes to the Model Survey

105. Experiences with the model survey showed that businesses operating outside the computer services also needed to be surveyed to obtain adequate coverage of certain activities. For instance, INSEE discovered that revenues from the provision of *systems and user tools software* were mainly gained by computer manufacturers.

[refer paragraphs 17, 24]

106. It was suggested that revenue collected in *packaged software products (own design)* (CPC 841) categories might also be split according to nature of payment, i.e. sale, rental, royalty, etc. This disaggregation would provide some insight into the means used by computer software developers to market their products. (The treatment of royalties may need further consideration given the usual international practice of excluding royalties from gross product statistics.)

[refer paragraph 13]

107. There is a need to more precisely define *computer processing services* (CPC 843). This category has been interpreted as including such varied activities as market research services and public opinion polling services. Statistics Canada qualify CPC 843 by stating that:

a) the essence of the service is to provide the use of computer equipment and software for different applications; and
b) the client determines the application, the supplier provides only the means.

[refer paragraph 15]

108. Revenues earned from the sale of software should be excluded from the *services to related parties* category in module 1.3. As mentioned earlier in paragraph 106, revenues disaggregated according to nature of payment could be collected as part of module 1.1 of the model survey.

[refer paragraph 19]

109. The strategy followed by INSEE in despatching less detailed questionnaires to smaller businesses should be seen as a valid option for countries framing surveys of the computer services in the future. This is particularly relevant for modules other than module 1.

[refer paragraph 22]

110. Income derived from the maintenance of software by third parties should be included under *systems maintenance services* in CPC 842, and not treated as part of CPC 841.

[refer paragraph 24]

111. The systems integrators problem raises the question of whether some means should be developed for splitting data for the various CPC categories for these types of businesses. It may be that systems integrators revenues should be collected separately; however, as long as at least percentage splits are obtained the data can be allocated back to the CPC.

[refer paragraphs 25, 41]

112. As discussed under both the ISIC and CPC subheadings above (paragraphs 101 and 103), *data base services* should be defined more precisely.

[refer paragraphs 17, 19, 28]

113. Statistics Sweden's collection of revenues by type of customer in percentage terms is a strategy which other countries may find useful to consider regarding future survey development in this field.

[refer paragraph 35]

114. Providing respondents with the option to supply data in percentage terms where monetary values are not readily available should be considered for inclusion in the structure of the model survey.

[refer paragraph 42]

115. Along with the issue of respondent load, the potential for profit margins to be derived and the lack of variation over time of goods and services used in operations points to the need for some changes to be made to module 2 as it presently stands. It may be that fewer dissections should be collected in future surveys.

[refer paragraphs 43-47]

116. Another alternative for redeveloping module 2 comes as a result of the implementation of module 3. Statistics Canada did not collect for the four broad categories, and both INSEE and Statistics Sweden sought purchases of goods and services for resale data as part of module 2. This suggests that some thought should be given to combining modules 2 and 3, leaving the model survey with a single module each devoted to income and expenditure.

[refer paragraphs 48-52]

117. Because of their small size, inventories data need not be collected from the computer services industry. For out-of-sector industries, inventory information can be obtained from other statistical collections.

[refer paragraphs 53-57]

118. Given the universal acceptance of the accruals-based accounting practices, the necessity of module 5 is queried.

[refer paragraphs 58-61]

119. The model survey framework should recognise that exports of goods would most appropriately be derived from each country's merchandise trade statistics. However, exports of services may have to be collected as part of the model survey.

[refer paragraphs 62-69]

120. As with module 6, imports data requirements can be best satisfied by countries deriving imports of goods from merchandise trade statistics, supplemented by a separate collection of trade in services data.

[refer paragraphs 70-75]

121. It may only be necessary to collect employment data in broad aggregates as part of the model survey. Detailed disaggregations by, for instance, qualifications, should be satisfied by other sources, such as population censuses.

[refer paragraphs 78-82]

122. The usefulness of capital expenditure and fixed assets data about the computer services industry is probably limited. The main interest is likely to be in the spread of computer-related goods into other industries. Thus the major requirement may be to seek these items from out-of-sector businesses as part of other collections and surveys.

[refer paragraphs 83-87]

123. The requirements of the software research and development module can be met through standard R&D surveys.

[refer paragraphs 88-92]

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FOOTNOTE

1 For more information, see the following Voorburg Group papers:
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