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**THE RELEVANCE OF CLASSIFICATIONS :  
A TEST USING THE FRENCH ANNUAL SURVEY  
ON SERVICE ENTERPRISES**

(The case of computer services)

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## **THE RELEVANCE OF CLASSIFICATIONS :A TEST USING THE FRENCH ANNUAL SURVEY ON SERVICE ENTERPRISES (The case of computer services)**

### **Summary**

The operation consists in a thorough processing of the annual survey on service enterprises, using detailed classifications of activities and of products. The computer services are taken as an example. The main characteristics of each industry or sub-industry are thus obtained. A table cross classifying industries and products is drawn : it permits, in particular, to point out the homogeneity and the specialisation of the various industries. At last, the examination of the different combinations of products allows to draw conclusions on the relevance of the classification of activities and to point out some border problems between products or between activities.

Rather than making a straightforward processing of an annual survey on service enterprises for the various activities retained by the Voorburg Group for the model surveys, it seemed preferable to achieve an in-depth processing, using the various tools made available in the French survey, in particular a detailed classification of products, as was already been presented in a previous meeting, but also a detailed classification of activities which goes beyond the 4 digits of ISIC/Rev.3 or of NACE/Rev.1. This permits numerous processings, generally for the use by professionals of the concerned activities rather than by national accountants, who do not operate at such detailed a level. As an example, the survey of the computer service industry for 1972 was selected.

The detailed classification of activities is strictly specific to the survey and is not, at any account, an official classification. Of course, it is consistent with the official French classification, of which it is a more detailed breakdown. It is therefore a classification for analysis purpose ; but it is also a useful tool for the management of the survey which permits a more thorough control of the questionnaires during the phase of "cleaning of the survey" (any modification of detailed activities is pointed out and must be confirmed). As it is not official, this detailed classification can be modified rapidly by the statistician, in line with the changes of the activities ; this happens rather frequently for the activities which are dynamic or which have started to develop rather recently (this concerns in particular the activities which have been the subject of proposals of model surveys by the Voorburg Group). Any change or addition of products in the survey results in a modification of the algorithm used for the calculation of the detailed principal activity.

The detailed classification of activities is a breakdown of ISIC. The detailed classification of products is the one presented by Statistics Canada in the model survey for computer services, with some refinements, as already presented in the French papers for the previous Voorburg Group meetings.

The classification of products is articulated with the classification of activities. It was therefore necessary to affect the product "Aa. Application software" to the activity "7220.

Software consultancy and supply" and to make correspondence between the product "B. Professional computer services" and two activities, which are (i) "7210. Hardware consultancy" and "7220. Software consultancy and supply". There are no difficulties to make a correspondence between any other major category of products and a single one activity.

The outcome is thus a cross classification (at least for computer services), or an "industry/products" classification, which is used in the table 2, which take into account in the columns, the product headings proposed in the model survey. The classification will be reviewed hereafter (the detailed headings Be1, Be2 and Ca1, Ca2 are Franco-French refinements of the headings Be and Ca : they have already been discussed in previous papers).

### **Classification of products and sub-activities**

#### **-7210 HARDWARE CONSULTANCY**

- Ba Consultancy services related to the installation of hardware
- Bb Systems and technical consulting services

#### **-7220 SOFTWARE CONSULTANCY AND SUPPLY**

- Bc Custom software development services
- (Ab) Application software
- Bd Systems analysis and programming services
- Be1 Facilities management services
- Be2 Operations management services
- Bf Systems maintenance services

#### **-7230 DATA PROCESSING**

- Ca1 Provision of computer material and network
- Ca2 Custom made computer services
- Cd Data entry services
- Ce Other computer processing services

#### **-7240 DATA BASE ACTIVITIES**

- D Data base services

#### **-7250 MAINTENANCE AND REPAIR OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY**

- E Computer repair and maintenance services

#### **-7260 OTHER COMPUTER RELATED ACTIVITIES**

- F Other computer services

## **Main characteristics of the various industries**

### **Four digits industries**

*(Remarks on the content of the tables :*

- *The service industry 7250 "Repair and maintenance" is not included hereafter.*
- *Enterprises classified as "not available" are those which do not have any employee as of 31 December 1992, or which have a negative value added ; this corresponds generally to units which are in the course of disappearing ; they represent 5.4 % of the enterprises but they employ only 0.8 % of the wage earners and 0.1 % of the value added.*

- *The turnover in table 1 includes the production added to the fixed assets, and does not include the royalties and patent fees received and the operating subsidies, which is not the case of the operating revenues in table 2, which are in line with the model survey of Statistics Canada ; the discrepancies are generally very small, except for application softwares which includes an important production added to fixed assets (1,775 millions FF or around US\$ 300millions) ; the two concepts have thus been alined.)*

In consideration with what is presented in the tables hereafter, three industries justify, by their importance, the existence of corresponding 4 digits headings. In total, computer services represent 155,000 wage earners and 57 billions French Francs of value added (about 10 billions US dollars). Industry 7210 (hardware consultancy) covers 26 % of the wage earners and 28 % of the value added, industry 7220 (software consultancy and supply) covers respectively 43 % and 44 % (in fact, according to its importance, it could cover two 4 digits headings, one of them regrouping the facilities management services, which are increasing rapidly, but understood in a wide sense, i.e. including the system analysis and programming services and the provision of computer material and network, and, eventually, the operating management services, but it seems that the latter has but small links with the referred sub-heading. Industry 7230 (data processing services) is also important with 20 % of the wage earners and 22 % of the value added.

This is not the case of industry 7240 (data base services) which, with 2,000 wage earners and a value added of 749 millions FF. (US \$ 150 millions), covers only 1.3 % of the wage earners and a similar percentage of the value added. The existence of such an industry at the four digits level has no justification, except if one expects a strong development in the near future ; but these activities cannot be said to be new ones ; the industry should therefore be included with another one, perhaps computer services.

Industry 7260 (other computer related activities ; 6 % of wage earners and 5 % of value added) does not require any particular comment. It is a "not elsewhere recorded" heading, a heading dear to statisticians.

**Table I.1 72 Computer and related services**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
not available	1,069	1,085	1,807	5,134	31	86
0 to 5	14,398	16,517	30,990	13,242	6,784	479
6 to 19	3,042	29,365	29,929	16,685	8,949	447
20 to 49	892	27,280	27,461	17,732	8,827	609
50 to 99	275	19,400	19,563	13,348	7,175	486
100 and over	188	61,288	61,633	43,214	24,750	1,571
Total	19,864	154,935	171,385	109,356	56,515	3,678

**Table I.2 7210 Hardware consultancy services**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
not available	275	105	298	3,631	62	5
0 to 5	4,646	5,008	9,476	4,472	2,553	104
6 to 19	811	7,685	7,843	5,041	2,715	135
20 to 49	210	6,322	6,309	4,396	2,283	103
50 to 99	78	5,415	5,491	3,434	2,057	55
100 and over	56	15,267	15,645	9,991	6,410	263
Total	6,076	39,802	45,063	30,966	16,081	664

**Table I.3 7220 Software consultancy and supply services**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
not available	148	452	591	698	34	17
0 to 5	4,554	5,318	10,010	4,379	2,276	183
6 to 19	1,234	12,319	12,478	7,146	3,914	179
20 to 49	362	10,925	10,916	7,600	3,724	253
50 to 99	115	8,010	8,107	5,067	2,920	126
100 and over	70	29,830	29,646	19,319	11,758	605
Total	6,483	66,854	71,749	44,208	24,627	1,362

**Table I.4 7230 Data processing services**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
not available	270	273	368	546	-78	56
0 to 5	3,306	4,018	7,409	2,334	1,222	155
6 to 19	560	5,459	5,822	2,537	1,302	81
20 to 49	251	7,986	8,222	4,272	2,148	186
50 to 99	70	5,115	5,124	4,395	1,919	286
100 and over	51	14,327	14,535	12,742	5,922	688
Total	4,508	37,178	41,481	26,827	12,434	1,452

**Table I.5 7240 Data base services**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
0 to 5	51	25	63	24	13	0
6 to 19	74	784	632	464	229	12
20 to 49	22	627	621	560	258	36
50 and over	3	594	617	553	250	9
Total	150	2,030	1,933	1,602	749	58

**Table I.6 7260 Other computer related activities**

Number of wage-earners per enterprise	Number of enterprises	Number of wage-earners as of 31 December	Total employment	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.	Fixed assets during the year 10 <sup>6</sup> FF.
not available	376	255	550	260	12	9
0 to 5	1,841	2,148	4,032	2,032	720	39
6 to 19	363	3,118	3,154	1,497	789	40
20 to 49	47	1,420	1,392	905	414	32
50 to 99	12	860	841	451	279	19
100 and over	8	1,270	1,189	610	409	6
Total	2,647	9,071	11,158	5,754	2,623	144

## Detailed industries

Hereafter, some data are taken together, by sub-industries, in order to provide for their relative importance. This table is presented, as an example, in the detailed classification, preferred by the professionals of the domain. From this detailed classification, one can, for example, draw some economic ratios, by differentiating according to the industry. The aim is not to propose for officialisation such a classification, which services only study purposes and which may vary from country to country according to the variable importance of each sub-industry (of course, the sub-industries presented here are linked to the French situation). Thus, one can point out, for France, the relative weakness of the facilities management services, which represent only 3% of the value added, while this share seems to be much higher in the United Kingdom. It can also be seen that the four digits industry "data base services" is the smallest as to its value added, even when compared to detailed sub-industries.

Activities	Number of enter- prises	Number of wage- earners as of 31 December	Turnover 10 <sup>6</sup> FF.	Value added 10 <sup>6</sup> FF.
<b>72 Total</b>	<b>19,864</b>	<b>154,935</b>	<b>109,356</b>	<b>56,514</b>
<i>7210 Hardware consultancy services</i>	<i>6,076</i>	<i>39,802</i>	<i>30,966</i>	<i>16,081</i>
Consultancy services related to the installation of hardware	1,118	10,597	8,237	4,027
Systems and technical consulting services	4,958	29,205	22,729	12,054
<i>7220 Software consultancy and supply services</i>	<i>6,483</i>	<i>66,854</i>	<i>44,208</i>	<i>24,627</i>
Customs software development services	3,233	30,717	17,912	10,904
Application software services	2,203	17,204	13,771	6,373
Systems analysis and programming services	472	7,705	4,210	2,615
Facilities management services	56	4,759	3,622	1,844
Operating management services	77	3,905	2,602	1,644
System maintenance services	422	2,564	2,091	1,248
<i>7230 Data processing services</i>	<i>4,508</i>	<i>37,178</i>	<i>26,827</i>	<i>12,434</i>
Provision of computer material and network	285	2,423	2,807	1,188
Custom made computer services	1,908	22,747	18,984	8,367
Data entry services	2,315	12,008	5,035	2,879
<i>7240 Data base services</i>	<i>150</i>	<i>2,030</i>	<i>1,602</i>	<i>749</i>
<i>7260 Others computer related services</i>	<i>2,647</i>	<i>9,071</i>	<i>5,754</i>	<i>2,623</i>

## Specialisation and homogeneity of the industries and sub-industries

Table II shows a cross classification industry-product of the operating revenues, as they are defined in the model survey by Statistics Canada. The columns corresponds to the various sub-industries included in the computer services (except, as already pointed out, the

maintenance and repairs). The rows correspond to the various computer service products, as well as to the other products and types of revenues (headings G to P in the model survey).

It is thus possible to look into the specialisation and the homogeneity of the various industries and sub-industries. Table III shows:

- in column 2, the share (in %) of each industry or sub-industry in the total of the corresponding product (for example, the sub-industry of consultancy services achieves  $(4453/5794=)$  77% of the consultancy services);

- in column 3, the share (in %), in the total of the corresponding product, of the enterprises "mono-computer product"; this ratio is presented at the detailed level and not at the four digits level;

- in column 4, the share (in %) of the product, corresponding to the industry or sub-industry, in the total turnover on computer services of the industry or sub-industry.

Table III permits to classify the various sub-sectors according to two criteria, "domination of the market" (share of the sub-industry in the total sales of the product) and "specialisation" (share of "mono-product" enterprises in the total sales of computer services of the sub-industry and share of the sales of the product in the total sales of the sub-industry):

*1 Dominating the market and specialised*

- Operating management services
- Data base services
- Data entry services
- System and technical consulting services
- Custom made computer services

*2 Specialised but not dominating the market*

- Consultancy services
- Provision of computer material and network
- System analysis and programming services

*3 Dominating the market but not specialised*

- Custom software development services
- Application software services
- Facilities management services

*4 Not classifiable*

- System maintenance services



TABLE II : TRANSFER PRODUCT/SECTOR: OPERATING REVENUES

MILLIONS FF

	7210		7220						7230			7240	7260	TOTAL
	CONSULTANCY SERVICES RELATED TO THE INSTALLATION OF HARDWARE	SYSTEMS AND TECHNICAL CONSULTING SERVICES	CUSTOM SOFTWARE DEVELOPMENT SERVICES	APPLICATION SOFTWARE	SYSTEMS ANALYSIS AND PROGRAMMING SERVICES	FACILITIES MANAGEMENT	OPERATIONS MANAGEMENT SERVICES	SYSTEMS MAINTENANCE SERVICES	PROVISION OF COMPUTER MATERIAL AND NETWORK	CUSTOM MADE COMPUTER SERVICES	DATA ENTRY SERVICES	DATA BASE SERVICES D	OTHER COMPUTER SERVICES F	
7210 Hardware consultancy														
Consultancy services	4453	112	1030	64	24	26	-	1	17	66	-	-	1	5794
Systems and technical consulting services	214	16642	911	382	45	206	25	11	97	1178	33	2	56	18906
7220 Software consultancy and supply														
Custom software development services	287	442	10750	530	86	54	3	75	29	432	44	12	48	12602
Application software	100	442	820	5787	120	142	5	87	117	178	155	5	54	7661
Systems analysis and programming services	46	124	206	310	2906	445	8	8	13	111	24	2	8	4211
Facilities management	18	64	15	14	105	2137	4	-	14	28	43	-	22	2462
Operating management services	23	27	26	29	8	9	2337	50	4	9	15	-	108	2645
Systems maintenance services	61	1717	263	704	46	3	1	738	13	31	113	-	23	3713
7230 Data processing														
Provision computer material and network	98	120	338	71	113	324	2	11	2225	481	46	12	132	3894
Customs made computer services	37	309	198	411	74	98	12	15	8	13643	135	47	280	15271
Data entry services	3	52	38	35	37	2	4	28	6	98	3467	4	117	3682
Other computer processing services	-	-	-	-	-	5	-	-	-	769	-	17	-	781
7240 Data base services														
Data base services	-	100	24	4	-	-	-	-	-	90	-	1177	17	1428
7250 Computer repair and maintenance														
Computer repairs and maintenance services	107	57	119	211	19	1	37	72	10	74	127	11	98	643
7260 Other computer services														
Others computer service	11	61	14	8	-	-	-	-	27	-	-	12	1083	2126
G Package softwares	308	902	809	881	153	27	109	203	71	389	322	50	988	6270
H Hardware sales	2157	744	1170	1468	245	57	36	515	11	625	88	5	237	7337
J Computer Hardware leasing or rental	28	2	-	13	-	-	-	-	26	-	-	-	1	68
L Computer related training services	74	347	203	529	21	3	1	64	11	45	59	2	704	2083
M Royalties and patent fees received	28	159	125	79	48	35	2	11	19	50	8	10	12	584
O Other goods and services	173	363	789	546	162	58	-	147	84	647	375	248	878	4482
P Operating subsidies	24	81	53	138	8	5	8	1	-	39	1	8	1	385
	8252	22873	17902	12214	4226	3038	2584	2098	2812	19001	5033	1818	8758	108020

**Table III: specialisation of the industries**

Activities	Share (in %) of		
	the sales of the industry or sub-industry in the total sales of the corresponding product	of the sales of "mono-product" enterprises of the sub-industry in the sales of computer services by the sub-industry	the sales of the product corresponding to the industry or sub-industry in the total sales of computer services by the industry or sub-industry
<i>7210 Hardware consultancy services</i>	84		83
Consultancy services	77	46	81
Systems and technical consulting services	84	59	82
<i>7220 Software consultancy and supply services</i>	85		85
Custom software development services	84	33	73
Application software services	72	21	67
Systems analysis and programming services	69	43	81
Facilities management services	87	17	62
Operating management services	88	85	96
Systems maintenance services	20	21	67
<i>7230 Data processing services</i>	87		87
Provision of computer material and network	55	55	86
Customs made computer services	89	49	79
Data entry services	89	58	83
<i>7240 Data base services</i>	83	85	91
<i>7260 Other computer related services</i>	94		68

As to facilities management services, it should be pointed out that it is normal that this industry be little specialised, since it is defined as "taking in charge, on a client account, of all or part of the computer function". The "all" corresponds to the product "facilities management services"; the "part of" includes other products such as "system analysis and programming services" and "provision of computer material and network services", these two products being sometimes promotion products for the "all" ("facilities management services"). Indeed, in Table II, one can see that the industry "facilities management services" performs, in 1992, the counterpart of FF. 445 millions (around US\$ 75 millions) in "system analysis and programming services" and of FF. 324 millions (US\$ 50 millions) in "provision of computer material and network services", while the turnover for "operating management services" is very small.

## **Associations of products**

Several combinations of the 12 basic (detailed) products of classes 7210 and 7240 have been tested. There are more than 4,000 possibilities of combinations, but only around ten of them, excluding the single product combinations, have some meaning when one looks into the results. The detailed products corresponding to a turnover smaller than FF. 100,000 (US\$ 20,000) were eliminated. The combinations found at least ten times (out of 3,115 records) were considered for retaining, as long as the total turnover of the corresponding enterprises, after correction using the rate of sampling, was more than FF. 500 millions (US\$ 100,000). The results are presented in table IV.

Looking into the table leads to some remarks:

1. Some products do not generate any association; they correspond, for most of them, to sub-industries qualified as "dominating the market and specialised" (consultancy services, operating management services, data entry services, data base services).

2. Other products are not presented in table IV, but this is only a problem of confidentiality; in fact, "facilities management services" are strongly associated with other products such as "provision of computer material and network services".

3. The majority of the combinations presented in table IV concern products classified within the same 4 digits kind of activity, except for "system and technical consulting services" (industry 7210) , associated with

- "custom made computer services" (7230)
- "application software services" and, moreover, "system maintenance services" (both classified within 7220)
- "custom software development services" (7220)

4. It should be noted that the product "system maintenance services" is present in 4 out of 10 combinations presented, and that it is associated three times with "application software services". Similarly, 6 combinations include "application software services" and 5 combinations include "custom software development services".

**Table IV: Combinations of products**

Combination	Frequency	Number of enterprises	Turnover (FF. 10 <sup>6</sup> )
- Custom software development services - Application software services	70	334	2,684
- Custom software development services - Application software services - System maintenance services	51	158	3,957
- Application software services - System maintenance services	46	141	1,179
- System and technical consulting services - Application software services	41	92	1,596
- System and technical consulting services - Custom software development services	37	233	1,272
- Custom software development services - System analysis and programming services	29	112	633
- System and technical consulting services - Application software services - System maintenance services	27	35	1,070
- Custom software development services - System maintenance services	14	117	800
- System and technical consulting services - Custom made computer services	14	60	746
- Application software services - Custom made computer services	12	59	1,643

### Conclusions of the operation

The type of analysis proposed for the computer services, to serve as an example, can be made, when the outcomes of the French annual survey on service enterprises are available, for any service industry.

The aim was not to prepare a detailed classification, which would only be relevant for each country taken individually, and usable by professionals. But the analysis allows for the characterisation of the relevance of the 4 digits industry classification, when it is put in relation with the product classification, using the following criteria:

- importance measured by the value added, or the turnover,
- situation as dominating the market of the product,
- specialisation in the corresponding product(s),
- combination of products.

It would not be opportune to propose changes in the existing industry classification in light of the results of the study. Nevertheless, one can have some regrets when considering the latest revision of ISIC and NACE, at least when the French situation is dealt with:

- the industry 7740 ("data base services") has not such an importance to justify the existence of a 4 digits heading for it;
- the industry 7220 ("software consultancy services") seems to have too much importance;
- the industry of "facilities management services", in their extended meaning, i.e. including the "system analysis services" and the "provision of computer material and network services", and perhaps also the "operating management services" have an importance which would justify to consider them apart in a single 4 digits heading.