



Information Technology Activity Survey

Western Australia

30 June 1991



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INFORMATION TECHNOLOGY ACTIVITY SURVEY

WESTERN AUSTRALIA

30 June 1991

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INFORMATION TECHNOLOGY ACTIVITY SURVEY

Introduction

This publication presents statistics from the Pilot Information Technology Activity Survey conducted in Western Australia in 1991. The survey resulted from the recommendations of a joint project undertaken by the Western Australian Government and the Australian Bureau of Statistics (ABS), Western Australian Office, to investigate the development of a set of Information Technology Indicators.

The development of micro-electronics has brought about a rapid expansion in the use of information processing technology and its applications throughout the world. The importation of a vast quantity of this equipment has had a significant effect on Australia's trade balance and working conditions in all sectors of the Australian economy.

Despite the increasing importance of Information Technology (IT) in society it is an area of statistical activity which has not been the subject of close study by National statistical agencies in Australia or overseas. There is little information about the size of the 'industry', the effect of government support programs or the penetration of IT through the economy and society.

Demand for IT statistical indicators

A joint ABS / Western Australian Government report⁽¹⁾ identified three main areas of user demand. These were:

- the production and trade in IT goods and services
- the use of IT and its effect on productivity
- the social impact of IT

Each of these areas of user demand requires different statistical collections and/or collection techniques. This study considers the first of these demands in relation to Western Australia. The collection was undertaken as a pilot study with the longer term aim of extending it to the whole of Australia. There is little information on the other areas of user demand, but the ABS has recently completed surveys of the use of advanced technologies in the Manufacturing and Mining sectors of the economy. The results of these surveys are now available.

Information technology

Although there has been considerable progress in the development of IT Statistical Indicators, there has been some debate on the definition of IT. While this has not led to a universally accepted definition, there is increasing agreement on the concepts to be applied. (A full discussion of the concepts of IT and the IT Industry has been published in the joint ABS/Western Australian Government report⁽¹⁾).

The experts on Information, Computer and Communication (ICC) statistics within the Organisation for Economic Co-operation and Development identified two separate, but interconnected, sectors that were considered suitable for further analysis:

ICC—1 covers information as a 'product', whether in the form of data, text, image or sound;

ICC—2 covers the means of producing and carrying information. This includes all basic hardware (components, microprocessors, etc.) and software (programs) involved in this function. It also includes all the systems and networks by which they are connected and the services needed to make them operational.

The emphasis in ICC—2 on the production and carrying of information, rather than the information itself, is consistent with the approach proposed by Ian Miles of the Science Policy Research Unit, University of Sussex, UK.

Miles' view is to relate the term IT to the use of the new core technology — micro-electronics — and the use of optronics or other technologies that might eventuate.

He further reserves the term IT for 'the heartland technology itself, and for those devices using its power to deliver information processing functionality as their main product: i.e. computers and telecommunications equipment.'⁽²⁾ He excludes applications of IT, machines which may incorporate IT, but are not themselves IT.

Another aspect to be considered within these IT boundaries is how much of the system is to be included. Miles notes that within our statistical systems there has been an overwhelming emphasis on hardware, manufactured products and 'production industries' compared with services, software, 'intangible products' and the tertiary sector. He states, 'As is commonly recognised, software and associated services have been a steadily growing share of the total price of IT systems; and within this share, maintenance and related functions have been steadily growing at the expense of initial production of software. The programmability of IT — its real data-processing power — is nothing without programs, and the development of programs to exploit the growing power of hardware is a significant bottleneck, and a substantial (and productive) activity.'

IT activity survey

In conducting a survey of IT activity there are difficulties in trying to define a distinct IT industry centred on such rapidly changing technology. Consequently, the approach taken in this survey is to measure the participation of businesses in IT activities regardless of the predominant industry of the organisation, **an activity-based rather than industry-based approach to IT statistics.**

The Miles definition of IT, which has been adopted for this survey, defines the actual goods produced and services supplied but does not consider the activities in relation to these goods and services. Although there is ready agreement to including the production of goods and services, there is some disagreement on whether the distribution of goods should be included as an IT activity. Given the high percentage of goods imported into Australia the exclusion of IT wholesaling activities would give a very limited picture of IT activity in Australia. Consequently, IT distribution activities are included in this survey.

Other areas of debate are in relation to indirect IT Services such as IT training and employment services. For example, businesses which specialise in employment services for IT related occupations, including businesses arranging contracts for individual operators such as programmers, have been excluded from the scope of the collection because of the overlap with general employment agencies.

For a full description of the definitions and methodology used in this survey see the Explanatory Notes on pages 20 - 22.

Recent developments

The ABS has conducted a series of seminars throughout Australia with major stakeholders with the objective of gaining a better understanding of future user requirements of IT statistics.

There is still difficulty in defining IT and with trying to define IT 'industries'. It is also clear that the traditional industry based collection methodology is unlikely to meet user needs. Activity data may be required for the suppliers of IT goods and services, whereas an economy wide perspective is required for the demand side.

The ABS has now developed a draft statistical framework for the collection of IT indicators. This has been recently circulated to interested parties and ABS is awaiting comment. In the meantime work is progressing to develop a limited set of Australia - wide IT statistical indicators for 1992-93.

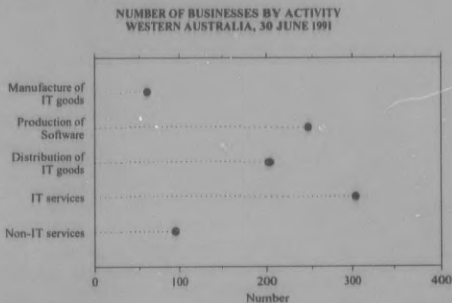
(1) Information Technology Statistical Indicators, November 1990, ISBN 0 7309 3958 8

(2) International Journal of Information Management (1989) 9 (275-288)
I. Miles: Information Needs for the Information Economy

MAIN FEATURES

- There were 439 businesses engaged in IT activity in Western Australia at the end of June 1991.

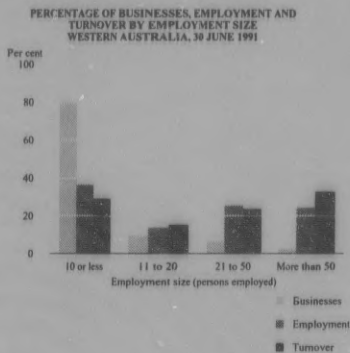
As shown by the chart below many of these businesses undertook a wide range of IT related activities.



- Of the 3,420 persons employed in businesses with IT activity, 87 per cent were employed on IT related activities.
- Turnover of \$480.8 million was generated by businesses with IT activity.
- 91 per cent of total turnover of these businesses was generated by IT activity.
- Businesses in 5 industry classes dominated, accounting for 99 per cent of employment and 99 per cent of turnover.
- Businesses in these industry classes showed a wide diversification of IT activity.
- Businesses with IT activity were characterised by a high proportion of smaller businesses, i.e. those which employed 10 persons or less.

- * A small number of larger businesses i.e. those which employed more than 50 persons, contributed a significant proportion of total employment and turnover.

The chart below illustrates the relative importance of both the smaller and larger businesses.



IT activity

IT activities occur in many parts of the economy. For this survey, statistical forms were sent to over 1,600 businesses in the 10 industry classes considered to be the most likely to undertake IT activity. From these, only 439 businesses from 8 industry classes were identified as undertaking IT activities in Western Australia as at 30 June 1991. These businesses covered most of the IT activity in WA. Those businesses, which undertook IT activity but which were not included in the survey, were generally in industry classes where:

- only a small proportion of the businesses in the industry class engaged in IT activities, or
- IT activities comprised a small proportion of the total activities of the businesses in the industry class.

TABLE 1: NUMBER OF BUSINESSES, EMPLOYMENT AND TURNOVER
BY ACTIVITY, WESTERN AUSTRALIA, 30 JUNE 1991

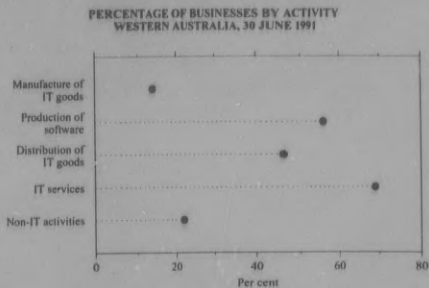
Activity	Businesses(a)	Persons employed	Turnover
		No.	\$'000
Manufacture of IT goods	61	446	51,309
Production of software	245	581	48,606
Distribution of IT goods	203	688	201,829
IT services	304	1,257	133,692
Non-IT activities	96	448	45,386
Total	439	3,420	480,822

(a) Where a business undertook more than one activity it is counted in each activity category. For this reason, when the number of businesses for each activity are added together the total is greater than the total number of all businesses reporting IT activity, i.e. 439.

- Turnover of \$335.5 million (70 per cent) was generated through the distribution of IT goods and the provision of IT services.
- Distribution of IT goods generated 42 per cent of total turnover and IT services contributed 28 per cent.
- These activities also contributed 57 per cent of total employment.
- IT services alone contributed 37 per cent of total employment of businesses with IT activity.

The non-IT activities varied widely between businesses, but were mainly in the service areas, including training and business, engineering, mining and geological consulting, many of which use IT in analysis and report production. Other non-IT activities included design, manufacture and sales of products, many of which are electronic based and some of which incorporate IT.

As shown by the chart below many of the 439 businesses in the survey engaged in more than one IT activity.



Industry

Businesses were classified by industry using the Australian Standard Industrial Classification (ASIC) according to the predominant activity undertaken at the business.

IT activities were identified in 8 industry classes.

The contribution of 3 classes, 4733 — *Professional equipment wholesalers*, 4857 — *Electrical appliance repairers* and 5900 — *Communication*, was relatively minor. The other 5 classes, 3352 — *Manufacture of electronic equipment n.e.c.*, 4734 — *Business machines wholesalers*, 4735 — *Electrical and electronic equipment wholesalers n.e.c.*, 6336 — *Technical services n.e.c.* and 6381 — *Data processing services* predominated contributing 99 per cent of employment and nearly 99 per cent of turnover.

TABLE 2: NUMBER OF BUSINESSES, EMPLOYMENT AND TURNOVER BY INDUSTRY CLASS, WESTERN AUSTRALIA, 30 JUNE 1991

Industry class	Businesses	Persons employed		Turnover
		No.	\$'000	
3352 Manufacture of electronic equipment n.e.c.	24	533	60,038	
4734 Business machines wholesalers	75	698	194,915	
4735 Electrical and electronic equipment wholesalers n.e.c.	22	241	41,849	
6336 Technical services n.e.c.	58	423	31,300	
6381 Data processing services	250	1,496	146,786	
(a) Other industry classes	10	29	5,934	
Total	439	3,420	490,822	

(a) Other industry classes includes: 4733 — *Professional equipment wholesalers*, 4857 — *Electrical appliance repairers n.e.c.* and 5900 — *Communications*.

Businesses classified to industry class 6381 — *Data processing services*, dominated IT activity.

- 57 per cent of all businesses were classified to this industry class.
- Businesses in this industry class contributed 44 per cent of total employment and generated 31 per cent of total turnover.

Industry class 4734 — *Business machines wholesalers* also made a significant contribution to IT activity.

- Although this industry class accounted for only 17 per cent of all businesses and 20 per cent of total employment it represented 41 per cent of total turnover.

Together, these 2 industry classes accounted for 74 per cent of all businesses, contributed 64 per cent of all employment and generated 71 per cent of total turnover.

Activity by industry

The majority of IT activity was undertaken by businesses classified to 5 industry classes.

They were:

3352 — *Manufacture of electronic equipment n.e.c.*, 4734 — *Business machines wholesalers*, 4735 — *Electrical and electronic equipment wholesalers n.e.c.*, 6336 — *Technical services n.e.c.* and 6381 — *Data processing services*.

The range of activities undertaken by the 5 predominant industry classes are examined in the table below.

The table draws together the different aspects of IT activity and industry to illustrate the range of activities undertaken across the industry classes. It provides an indication of the number and type of activities undertaken by businesses in each industry class.

**TABLE 3: NUMBER OF BUSINESSES BY ACTIVITY
FOR SELECTED INDUSTRY CLASSES,
WESTERN AUSTRALIA, 30 JUNE 1991**

Activity	Industry class				Data processing services
	Manufacture of electronic equip. n.e.c.	Business machines wholesalers	Electrical & electronic equip. wholesalers	Technical services n.e.c.	
Manufacture of IT goods					
Computer hardware	13	7	3	2	6
Peripheral equipment	7	5	1	8	4
Telecommunications equip.	13	—	3	2	5
Other IT products	9	—	2	2	2
Total manufacturing	24	8	5	9	12
Production of software					
Operating systems	6	16	1	11	29
Customised software	8	26	3	28	134
Off-the-shelf software	3	20	—	13	82
Total software	11	30	3	37	163
Distribution of IT goods					
Hardware products	8	54	14	10	70
Software products	7	54	6	14	91
Telecommunications equip.	5	23	13	2	26
Other IT equipment	2	7	4	3	3
Total distribution	9	60	20	16	95
IT services					
Repair and maintenance of IT equipment	12	46	16	7	36
Data processing services	—	17	2	17	63
Database services	1	15	2	15	67
System design services	7	38	8	23	123
Other IT Services	2	17	2	4	50
Total services	14	61	16	39	166
Non-IT activities	4	20	4	23	44
Total IT businesses	24	73	22	58	250

Within each of these industry classes a broad range of IT activity from manufacturing, to the provision of IT services, was undertaken.

For example, many businesses classified to industry class 3332 — *Manufacture of electronic equipment n.e.c.*, not only undertook manufacturing activity but also engaged in software production as well as the provision of IT services.

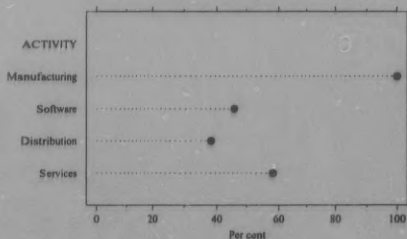
This diversification of activity was particularly evident in industry class 6381 — *Data processing services*. A total of 250 businesses were classified to this class.

- 67 per cent provided IT services.
- 65 per cent were involved in software production.
- 40 per cent engaged in the distribution of IT goods.
- A small proportion were also involved in the manufacture of IT goods.

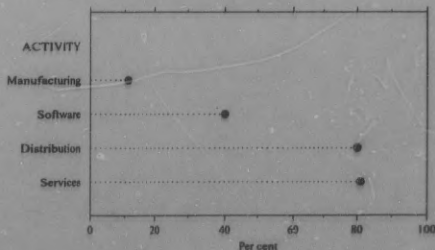
A similar situation was found in other industry classes, although, the degree of involvement in each activity varied within each industry class.

The following charts indicate the level of diversification of IT activity for each of the 5 major industry classes.

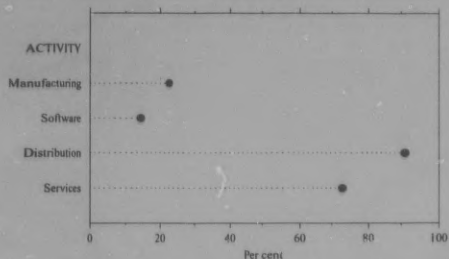
MANUFACTURE OF ELECTRONIC EQUIPMENT N.E.C.
PERCENTAGE OF BUSINESSES BY TYPE OF ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



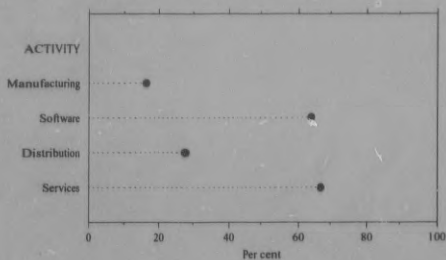
BUSINESS MACHINES WHOLESALERS
PERCENTAGE OF BUSINESSES BY TYPE OF ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



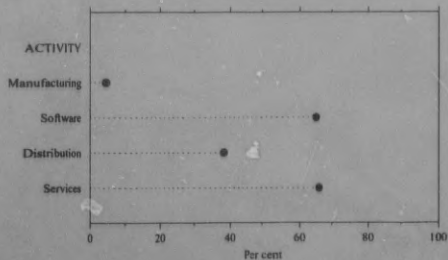
ELECTRICAL AND ELECTRONIC EQUIPMENT WHOLESALERS N.E.C.
PERCENTAGE OF BUSINESSES BY TYPE OF ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



TECHNICAL SERVICES N.E.C.
PERCENTAGE OF BUSINESSES BY TYPE OF ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



DATA PROCESSING SERVICES
PERCENTAGE OF BUSINESSES BY TYPE OF ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



The following table focuses on the major contributions made to employment and turnover by the predominant industry classes for each activity.

The charts which follow the comments for each activity further illustrate this contribution.

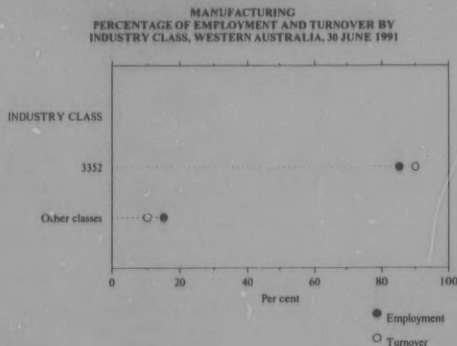
TABLE 4: NUMBER OF BUSINESSES, EMPLOYMENT AND TURNOVER, ACTIVITY BY INDUSTRY CLASS, WESTERN AUSTRALIA, 30 JUNE 1991

<i>Industry Class</i>	<i>Businesses</i>	<i>Persons employed</i>	<i>Turnover</i>
		No.	\$'000
MANUFACTURING			
3352 Manufacture of electronic equipment n.e.c	24	378	46,230
Other classes	37	68	5,079
Total manufacturing	61	446	51,309
PRODUCTION OF SOFTWARE			
4734 Business machines wholesalers	30	56	9,326
6381 Data processing services	163	449	34,659
Other classes	52	76	4,620
Total software production	245	581	48,606
DISTRIBUTION OF IT			
4734 Business machines wholesalers	60	344	137,656
4735 Electrical and electronic equipment wholesalers n.e.c.	20	87	21,474
6381 Data processing services	95	197	34,304
Other classes	28	60	8,395
Total distribution of IT	203	688	201,829
IT SERVICES			
4734 Business machines wholesalers	61	245	35,821
4735 Electrical and electronic equipment wholesalers n.e.c.	16	111	14,056
6336 Technical services n.e.c.	39	119	7,266
6381 Data processing services	160	705	68,204
Other classes	22	77	8,345
Total IT services	304	1,257	133,692

Manufacturing

The majority of manufacturing activity was concentrated in industry class 3352 — *Manufacturing of electronic equipment n.e.c.*, although a small amount of manufacturing activity was undertaken by businesses classified to other ASIC classes.

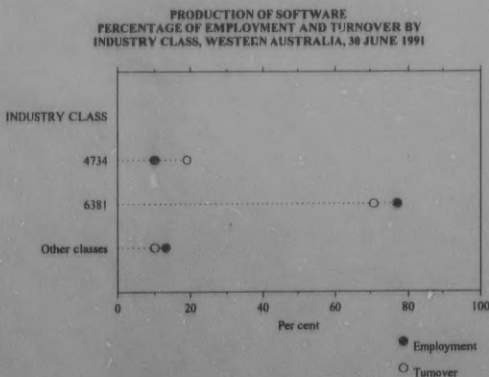
- Businesses classified to 3352 — *Manufacturing of electronic equipment n.e.c.* contributed 85 per cent of employment engaged on manufacturing of IT goods and services, and contributed 90 per cent of the turnover.



Production of software

There are no specific industry classes in ASIC dedicated to production of software or IT services. Production of software and non-hardware related IT services are generally classified to industry classes in the Business services section of ASIC, particularly the Data processing services and Technical services n.e.c. classes. Businesses which were classified to these industry classes and which were identified as undertaking IT activities were engaged in a wide variety of activities.

- Industry class 6381 — *Data processing services* class dominated this activity and accounted for 77 per cent of employment and 71 per cent of turnover.



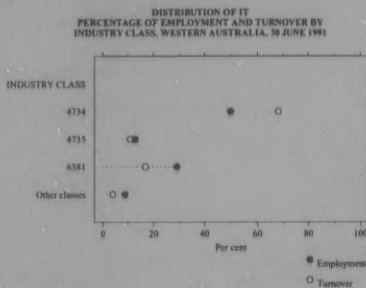
Distribution of IT

Distribution activity was spread across all of the industry classes surveyed. Most distribution activity was undertaken by:

- Businesses in 4734 — *Business machines wholesalers* which accounted for about 50 per cent of employment and generated 68 per cent of turnover.

It is also worth noting that:

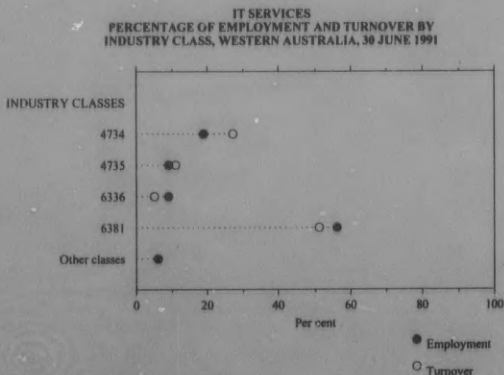
- Businesses in 6381 — *Data processing services* represented nearly 50 per cent of all businesses engaged in this activity. However, these businesses contributed only about 29 per cent of the employment and 17 per cent of the turnover for the activity.



IT services

IT service activities were carried out mainly by:

- Businesses classified to 6381 — *Data processing services* which accounted for 56 per cent of employment and 51 per cent of the turnover.
- Businesses classified to industry class 4734 — *Business machines wholesalers* which contributed 19 per cent of employment and generated 27 per cent of turnover



Employment size of businesses

This section analyses IT activity by examining the contribution made to employment and turnover according to the employment size of businesses and the type of activity undertaken.

Where a business undertook more than one activity it is counted in each activity category under 'No. of businesses'. For this reason when the number of businesses for each activity are added together the total is greater than the total number of all businesses reporting IT activity, i.e. 439. Further, details in the specific activity sections relate to the employment and turnover on the particular activity, but businesses are classified according to the employment size of the whole business.

A high proportion of smaller businesses, i.e. those which employed 10 persons or less, characterised those businesses with IT activity. These smaller businesses accounted for 81 per cent of all businesses with IT activity whereas larger businesses, those which employed over 20 persons, accounted for only 9 per cent.

TABLE 5: NUMBER OF BUSINESSES, EMPLOYMENT AND TURNOVER BY EMPLOYMENT SIZE, WESTERN AUSTRALIA, 30 JUNE 1991

	Employment size (persons)					Total
	Fewer than 4	4 to 10	11 to 20	21 to 50	More than 50	
MANUFACTURING						
No. of businesses	18	20	12	11(a)	(a)	61
Persons employed (no.)	20	39	73	134	180	446
Turnover (\$'000)	2,274	3,998	8,661	17,474	18,902	51,309
PRODUCTION OF SOFTWARE						
No. of businesses	139	70	18	12	6	245
Persons employed (no.)	155	164	86	111	63	581
Turnover (\$'000)	9,709	10,965	7,103	10,066	10,763	48,606
DISTRIBUTION OF IT						
No. of businesses	77	90	20	13	3	203
Persons employed (no.)	81	230	91	126	160	688
Turnover (\$'000)	11,705	45,167	29,453	38,196	77,308	201,829
IT SERVICES						
No. of businesses	152	99	25	20	8	304
Persons employed (no.)	164	278	156	349	310	1,257
Turnover (\$'000)	9,537	32,459	18,611	37,228	35,857	133,692
NON-IT ACTIVITY						
No. of businesses	38	36	11	7	4	96
Persons employed (no.)	27	94	59	151	117	448
Turnover (\$'000)	2,459	10,523	9,190	9,800	13,414	45,386

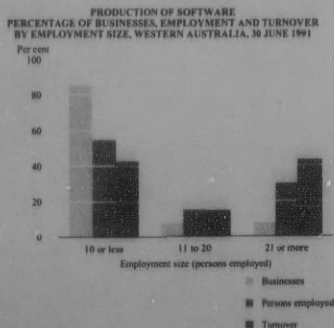
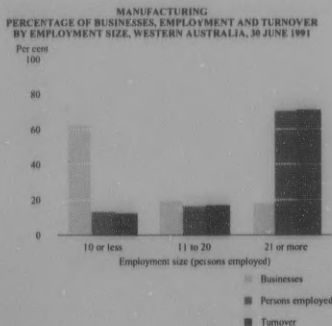
(a) Businesses with employment size 'more than 50' are included in employment size category '21 to 50'.

- Although the smaller businesses represented 81 per cent of all businesses with IT activity, they contributed only 37 per cent of total employment compared with 50 per cent by the larger businesses.
- The picture was much the same in relation to turnover, as smaller businesses contributed only \$138 million or 29 per cent of total turnover compared with \$269 million or 56 per cent of the total contributed by the larger businesses.
- It is interesting to note that of the \$269 million in turnover contributed by larger businesses, \$156 million or 57 per cent of total turnover was contributed by those businesses with more than 50 employees.

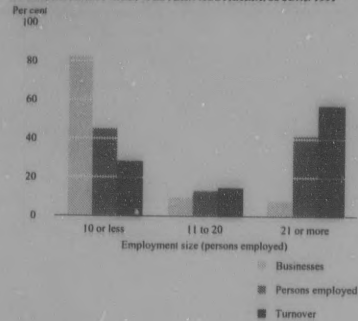
The following charts for each IT activity illustrate the contribution made to employment and turnover by businesses according to employment size category.

The charts show a similar pattern of distribution of employment and turnover across the employment size categories. However, data for manufacturing activity are of particular interest. This is because although like all categories of IT activity, most of the businesses undertaking manufacturing were in the smaller employment size categories, the major contribution to employment and turnover came from a few larger businesses.

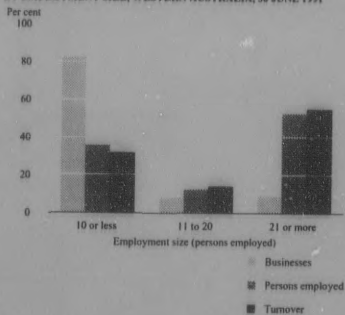
- 62 per cent of all businesses engaged in the activity were smaller businesses but their contribution to total employment was relatively minor at 13 per cent and their contribution to turnover was similar at 12 per cent.
- This contrasted with the larger businesses engaged in the activity which accounted for 18 per cent of all businesses involved in manufacturing. Larger businesses contributed 70 per cent of all employment and 71 per cent of turnover derived from manufacturing.



**DISTRIBUTION OF IT
PERCENTAGE OF BUSINESSES, EMPLOYMENT AND TURNOVER
BY EMPLOYMENT SIZE, WESTERN AUSTRALIA, 30 JUNE 1991**



**IT SERVICES
PERCENTAGE OF BUSINESSES, EMPLOYMENT AND TURNOVER
BY EMPLOYMENT SIZE, WESTERN AUSTRALIA, 30 JUNE 1991**



Turnover size

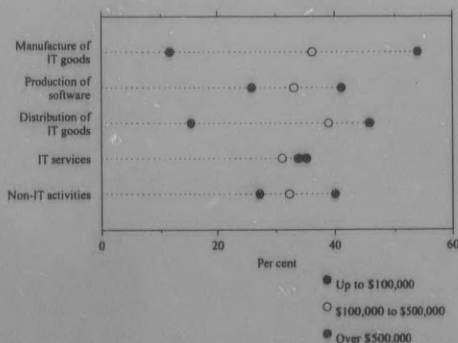
As shown by the following table and chart the number of businesses was spread fairly evenly across the turnover size groups. The major differences occurred in the manufacturing and distribution activities where there were more businesses in the larger turnover groups.

Businesses engaged in the production of software and IT services activities were spread more evenly across the turnover groups, although production of software indicated a slight majority of smaller businesses.

TABLE 6: NUMBER OF BUSINESSES, ACTIVITY BY TURNOVER, WESTERN AUSTRALIA, 1990-91

Activity	Turnover (\$'000)						Total
	Less than 50	50 to 100	Over 100 to 200	Over 200 to 500	Over 500 to 1,000	Over 1,000	
Manufacture of IT goods	3	4	10	12	11	21	61
Production of software	42	59	41	40	25	38	245
Distribution of IT goods	11	20	31	48	35	58	203
IT services	40	68	41	53	35	67	304
Non-IT activities	9	17	15	16	13	26	96

PERCENTAGE OF BUSINESSES BY TURNOVER GROUP BY ACTIVITY, WESTERN AUSTRALIA, 30 JUNE 1991



Average turnover per employee

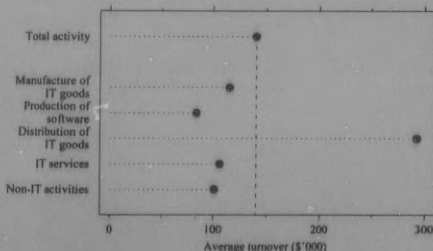
As shown by the table and charts which follow the average turnover per person employed varied across the size of the business, but variation was greater across different activities. The major difference occurred in distribution of IT goods. This reflects the lower labour intensity of this activity. The low turnover per person employed for production of software generally reflects the lower costs and higher value added. However, variations in these figures do not necessarily reflect on the productivity of individual businesses.

The relatively high average turnovers for businesses (which employed more than 50 persons) engaged in production of software and distribution of IT goods compared with other employment size groups in the same activities was generally caused by a small number of large businesses with very high turnover. Low average turnover in the smaller employment size businesses generally occurred because of a number of very small, perhaps even part-time businesses.

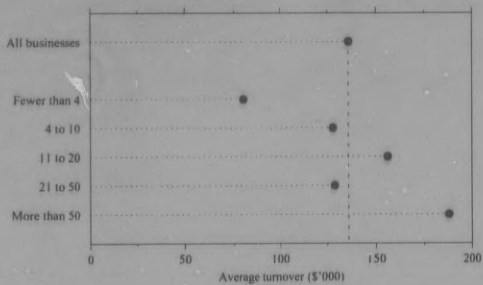
TABLE 7: AVERAGE TURNOVER PER PERSON EMPLOYED BY ACTIVITY BY EMPLOYMENT SIZE, WESTERN AUSTRALIA, 30 JUNE 1991

Activity	Employment size (persons)					Total
	Fewer than 4	4 to 10	11 to 20	21 to 50	More than 50	
Average turnover (\$'000)						
Manufacture of IT goods	114	103	119	130	105	115
Production of software	63	67	81	91	171	84
Distribution of IT goods	145	196	324	303	483	293
IT services	58	117	119	107	116	106
Non-IT activities	91	112	156	65	115	101
Total	80	128	156	129	188	141

AVERAGE TURNOVER PER EMPLOYEE BY ACTIVITY
WESTERN AUSTRALIA, 30 JUNE 1991



AVERAGE TURNOVER PER EMPLOYEE BY
EMPLOYMENT SIZE, WESTERN AUSTRALIA, 30 JUNE 1991



EXPLANATORY NOTES

Introduction

Definitions

Information technology

IT activities

1. The aim of this survey was to provide a measure of the IT activities undertaken by businesses in Western Australia.

2. Information Technology (IT) is defined as equipment used in the capture, processing, storage and transmission of information and the software that operates that equipment. More specifically, it meets the following criteria:

- a. as is generally applied to micro-electronic and opto-electronic based technologies;
- b. its primary product is the delivery of information processing functionality, i.e. the collection, analysis, processing, storage, retrieval, transmission and/or output of data/information;
- c. it includes the 'heartland technology', computers and peripheral equipment, such as terminals and printers, telecommunications and other information handling equipment, such as modems, associated software, instructions, operating systems and services. It also includes parts or components for this equipment and cabling.
- d. it excludes machines, such as, industrial robots and other equipment which may incorporate IT components but whose primary function is not information processing. These are not IT themselves, but applications of IT. These applications of IT and their use in the economy can be measured through statistical collections such as the 'Survey of Manufacturing Technology' and the 'Survey of Mining Technology' which have been conducted by the ABS.

3. IT activities are activities relating to the production and trade of IT goods and services. These include:

- * the manufacture of IT goods, including computer hardware, peripheral equipment, telecommunications equipment, etc.
- * the production of software, including both operating systems and applications software
- * the distribution of IT goods, including hardware and software
- * the supply of IT services, including repair and maintenance of equipment, data processing services, database services, system design services, etc.

4. Indirect IT services are excluded from this collection. These are areas such as training and employment services. Employment services, including businesses arranging contracts for individual operators such as programmers, have been excluded from the scope of the collection because of the overlap with general employment agencies. Similarly, provision of standard training courses in the use of proprietary products is not considered to be IT activity for the purposes of this survey.

Population derivation

5. The aim was to select a survey population consisting of all businesses producing IT goods and services in Western Australia not solely for their own use, i.e. the business must be producing these goods and services for use by other businesses.

6. The most comprehensive list of businesses available for such a collection comes from the ABS Business Register. However, business units on this Register have no indicator of IT activity so units can only be selected according to their industry and, for the Australian Standard Industrial Classification (ASIC), this is determined by the predominant activity of the unit. In this case it was decided to select all businesses which had any location in Western Australia classified to an ASIC Class in which IT activities are likely to be undertaken.

7. To determine which ASIC Classes should be included the following steps were undertaken:

- * the ASIC Classes, to which the IT activities identified in paragraph 3 above were primary were identified
- * other sources were checked to identify businesses with any activities primary to these ASIC Classes
- * the ABS Business Register was then checked to identify the ASIC Class to which these businesses were classified. This identified ASIC Classes in which IT activities were undertaken as secondary activities of the businesses.
- * some of these Classes were eliminated where a relatively small proportion of businesses in the Class were engaged in IT activities. For instance, ASIC Class 6372, Accounting Services, in which there were many businesses but only a few supplied IT services. Others were eliminated where IT activities comprised a very small proportion of the activities of each business, e.g. ASIC Class 4814, Department Stores. In both cases it was considered that the Classes contributed very little to total IT activity.

8. The list of ASIC Classes in which significant IT activities were likely to occur was determined to be:

Class	Title
3352	Electronic equipment n.e.c.
4733	Professional equipment wholesalers
4734	Business machines wholesalers
4735	Electrical and electronic equipment wholesalers n.e.c.
4857	Electrical appliance repairers
5900	Communication
6336	Technical services n.e.c.
6381	Data processing services

Standard statistical units

9. The ABS system of integrated economic statistics defines a management unit as the highest-level accounting unit within a business, having regard for industry homogeneity. In nearly all cases it coincides with the legal entity owning the business (i.e. company, partnership, trust, sole operator, etc.). However, in the case of large diversified businesses there may be more than one management unit, each coinciding with a 'division' or 'line of business'. A division or line of business is recognised where separate and comprehensive accounts are compiled for it.

Scope and coverage

10. Statistics for the IT Activity Survey relate to the Western Australian operations of management units which have at least one location classified to any of the ASIC Classes specified in paragraph 8.

Definition of data items

11. The information shown for the data items defined below relates to businesses which were operating at 30 June 1991.

Businesses

This is the number of units operating at 30 June 1991. The unit is the total State operations of each selected management unit.

Employment

Employment comprises working proprietors and partners at the end of June and employees on the payroll at 30 June 1991. Independent contractors are included, but employees of other companies that supply contract services are excluded. If a person is involved in more than one activity then that person is allocated to the main activity in which he or she is involved, but the turnover is allocated to the activities from which it is earned. This means that the total number of businesses classified to each activity by employment size group may not equal the number of businesses classified by turnover size group.

Turnover

This includes the total income of the business from the particular activity.

Related publications

12. The following is a list of other publications containing technology related statistics:

- Manufacturing Technology Statistics, Australia, Summary (8123.0)
- Mining Technology Statistics, Australia, Summary (8413.0)
- Professional and Business Services, Australia — Computing Services (8669.0)
- International Trade in Services, Australia (5354.0)

Symbols and other usages

—	nil or rounded to zero
n.e.c.	not elsewhere classified
ASIC	Australian Standard Industrial Classification



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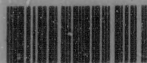
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