

INNOVATION IN INDUSTRY, 1993-94

Purpose of this Paper

This paper provides readers with information about the ABS' endeavours to develop statistical data on the nature and extent of innovation in Australian industry. It also provides some initial data on the level of innovation. It is planned to produce a detailed statistical bulletin around June 1995 and interested users are invited to register their interest by completing the tear off slip at the back of this paper.

Background to Innovation Surveys in Australia

Interest in the extent, type and nature of innovation has been increasing both in Australia and overseas. The globalisation of industry together with its significant restructuring, and the introduction of new and advanced technological processes have resulted in demand for a greater understanding of the innovation process.

The general absence of a suitable conceptual framework for the measurement of innovation led the member countries of the OECD to develop a set of standard concepts and definitions for measuring this phenomenon. The culmination of this work resulted in the publication of a manual (the *Oslo manual*¹) giving details of the agreed standards as well as a set of proposed core questions.

In late 1993 the ABS undertook a pilot survey of innovation in the manufacturing industry. The objectives of this pilot survey were to assess whether surveys of innovation could complement the established Research and Development surveys and satisfy the need for more extensive indicators of innovation in industry. Results from the pilot survey were released in February 1994. Since then the ABS has proceeded to undertake two surveys. The first was a survey of the Manufacturing industry in respect of 1993-94. The second survey was conducted with respect to 1993-94 and covered all industries, with the exceptions of Government Administration and Defence, Agriculture, Forestry and Fishing, and Manufacturing.

The ABS surveys of innovation differ from the OECD guidelines in some respects. The OECD's definition of innovation is restricted to technological innovation. The ABS has widened this definition to include non-technological innovation. The ABS makes no distinction between "major product" innovations and "incremental product" innovations and also omits a number of optional topics, such as "Factors contributing to the success of innovative projects". The reasons for doing so are covered in more detail in the Working Paper released in February 1994. The other major difference is that the second ABS survey covers non-manufacturing industries while the *Oslo manual* restricts itself only to the manufacturing sector.

¹ OECD, *Oslo manual - OECD Proposed Guidelines for Collecting and Interpreting Technological Innovation*, OCDE/GD (92)26 (Paris), 1992.

INQUIRIES

- for further information about statistics in this publication and the availability of related unpublished statistics, contact John Ovington on Canberra (06) 252 5189 or any ABS State office.
- for information about other ABS statistics and services please refer to the back page of this publication.

- Statistical Unit** The business unit from which information is collected and published is the management unit which is the highest-level accounting unit within a business, having regard for industry homogeneity, for which accounts are maintained. In nearly all cases it coincides with the legal entity owning the business (i.e. company, partnership, trust, sole operator, etc.). In the case of large diversified businesses, however, 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. The ABS Business Register provided the population frame from which the sample units were selected.
- Classification by Industry** The statistics in this information paper are classified by industry in accordance with the 1993 edition of the Australian and New Zealand Standard Industrial Classification (ANZSIC). Each business unit is classified to a single industry. The industry allocated is the one which provides the main source of income for the management unit irrespective of whether a range of activities or a single activity is undertaken by the unit.
- Reliability of Estimates** The statistics in this information paper must be interpreted with caution:
- (a) The results are preliminary, based on about 80 per cent response; and
 - (b) The estimates presented in this information paper are subject to sampling and non-sampling error. The effect of non-sampling error is unknown, but, may be significant as is this the first time this survey has been conducted.
- Survey of the Manufacturing Industry** The sample comprised approximately 4,900 management units in the manufacturing industry and data was collected in respect of the three year period ending June 1994. This survey was based on a stratified random sample of businesses taken from the Australian Bureau of Statistics' Business Register. The survey was conducted by mailed questionnaires and an 80 per cent response rate has been obtained to date.
- The survey covered enterprises of all sizes within the manufacturing industry of Australia, regardless of whether those businesses have undertaken innovative activities during the period.
- Survey of the Non-manufacturing Industries** The sample comprised approximately 6,700 management units in all non-manufacturing industries, with the exceptions of Government, Administration and Defence and Agriculture, Forestry and Fishing, and data was collected in respect of the year ending June 1994. This survey was based on a stratified random sample of businesses taken from the Australian Bureau of Statistics' Business Register. The survey was conducted by mailed questionnaires and an 80 per cent response rate has been obtained to date.
- The survey covered enterprises of all sizes in all industries, within the surveyed industries, regardless of whether those businesses have undertaken innovative activities during the period.
- Survey Findings** All the industries surveyed undertook some innovative activities. Overall one fifth of all business surveyed undertook some innovation. The amount and type of innovative activities varies between industries. For example, Electricity, Gas and Water Supply, although a relatively small industry, is showing the greatest overall level of innovation while Construction is showing the least. Looking at a classification by size, the proportion of innovative businesses increases as the employment of the business increases.
- The overall proportion of businesses undertaking technological innovation is twelve per cent, ranging from a high of thirty five per cent in Manufacturing down to six per cent in Transport and Storage. Approximately fourteen per cent have

undertaken non-technological innovation, ranging from a high of forty nine per cent in Electricity, Gas and Water to a low of seven percent in Retail Trade. Generally non-technological innovation, is a significant contributor to the amount of innovation undertaken by industry. This is especially the case in the larger businesses, where sixty six per cent of businesses with employment greater than one hundred undertake non-technological innovation.

Throughout the following tables the terminology "Innovative status" refers to the proportion of businesses undertaking innovation.

**Availability of
Unpublished Data**

For further information regarding the statistics in this publication contact Mr Bill Pattinson (06 252 5019), Mr John Ovington (06 252 5189) or Ms Liz Finlay (06 252 7224). Please note, however, that more detailed data is not expected to be available until June 1995.

For information regarding other ABS statistics and services please contact Information Services Section on Canberra (06) 252 6627 or any ABS State office.

TIM SKINNER
Acting Australian Statistician

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If you would like to be kept informed of the progress of Surveys of Innovation please complete and return this form.

Name: _____

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Send to: Innovation Statistics Subsection
Australian Bureau of Statistics
PO Box 10
Belconnen ACT 2616

Or fax to: (06) 252 7004

TABLE 1. INNOVATIVE STATUS BY INDUSTRY DIVISION(a), 1993-94

		<i>Per cent of businesses undertaking innovative activity</i>				
<i>ANZSIC code</i>	<i>Industry division</i>	<i>Product innovation</i>	<i>Process innovation</i>	<i>Technological innovation (subtotal)</i>	<i>Non technological innovation</i>	<i>One or more activities</i>
B	Mining	7.5	1.9	8.7	22.4	25.6
C	Manufacturing(b)	30.7	22.5	34.8	23.3	42.3
D	Electricity, Gas and Water Supply	3.0	17.2	18.2	49.3	50.3
E	Construction	4.1	4.9	7.9	10.7	14.5
F	Wholesale Trade	11.4	7.9	16.0	25.1	31.8
G	Retail Trade	6.4	10.0	11.9	6.6	17.1
H	Accommodation, Cafes and Restaurants	5.6	7.3	7.3	16.7	19.7
I	Transport and Storage	2.6	6.2	6.3	44.5	16.5
J	Communication Services	0.8	19.2	19.8	16.0	20.4
K	Finance and Insurance	0.4	6.4	6.7	10.1	12.9
L	Property and Business Services	3.5	5.4	8.5	13.3	17.6
N	Education	0.2	11.8	11.9	15.4	19.1
O	Health and Community Services	3.9	9.3	9.9	16.0	21.1
P	Cultural and Recreational Services	4.0	19.7	20.7	17.5	31.0
Q	Personal and Other Services	3.4	6.7	9.3	11.9	16.5
B-Q	Total all selected industries	7.0	8.8	12.2	13.8	20.9

(a) Excludes Divisions (A) Agriculture, Forestry and Fishing and (M) Government, Administration and Defence. (b) Data for the reference period 1991-94

TABLE 2. INNOVATIVE STATUS BY INDUSTRY SUBDIVISIONS — MANUFACTURING, 1991-94

		<i>Per cent of businesses undertaking innovative activity</i>				
<i>ANZSIC code</i>	<i>Industry subdivision</i>	<i>Product innovation</i>	<i>Process innovation</i>	<i>Technological innovation (subtotal)</i>	<i>Non technological innovation</i>	<i>One or more activities</i>
21	Food, Beverage and Tobacco Manufacturing	32.1	22.8	33.9	22.3	43.6
22	Textile, Clothing, Footwear and Leather Manufacturing	31.1	23.5	34.2	17.6	40.0
23	Wood and Paper Product Manufacturing	13.7	10.9	16.3	16.8	27.2
24	Printing, Publishing and Recorded Media	22.7	27.6	34.0	24.6	45.6
25	Petroleum, Coal, Chemical and Associated Product Manufacturing	44.9	30.5	46.9	35.8	53.6
26	Non-Metallic Mineral Product Manufacturing	33.9	22.4	35.2	25.5	46.8
27	Metal Product Manufacturing	29.5	20.3	33.5	27.3	46.0
28	Machinery and Equipment Manufacturing	39.9	24.5	42.9	24.5	47.1
29	Other Manufacturing	28.3	21.1	33.2	18.7	39.7
21-29	Total Manufacturing	30.7	22.5	34.8	23.3	43.3

TABLE 3. INNOVATIVE STATUS BY SIZE OF BUSINESS(a), 1993-94(b)

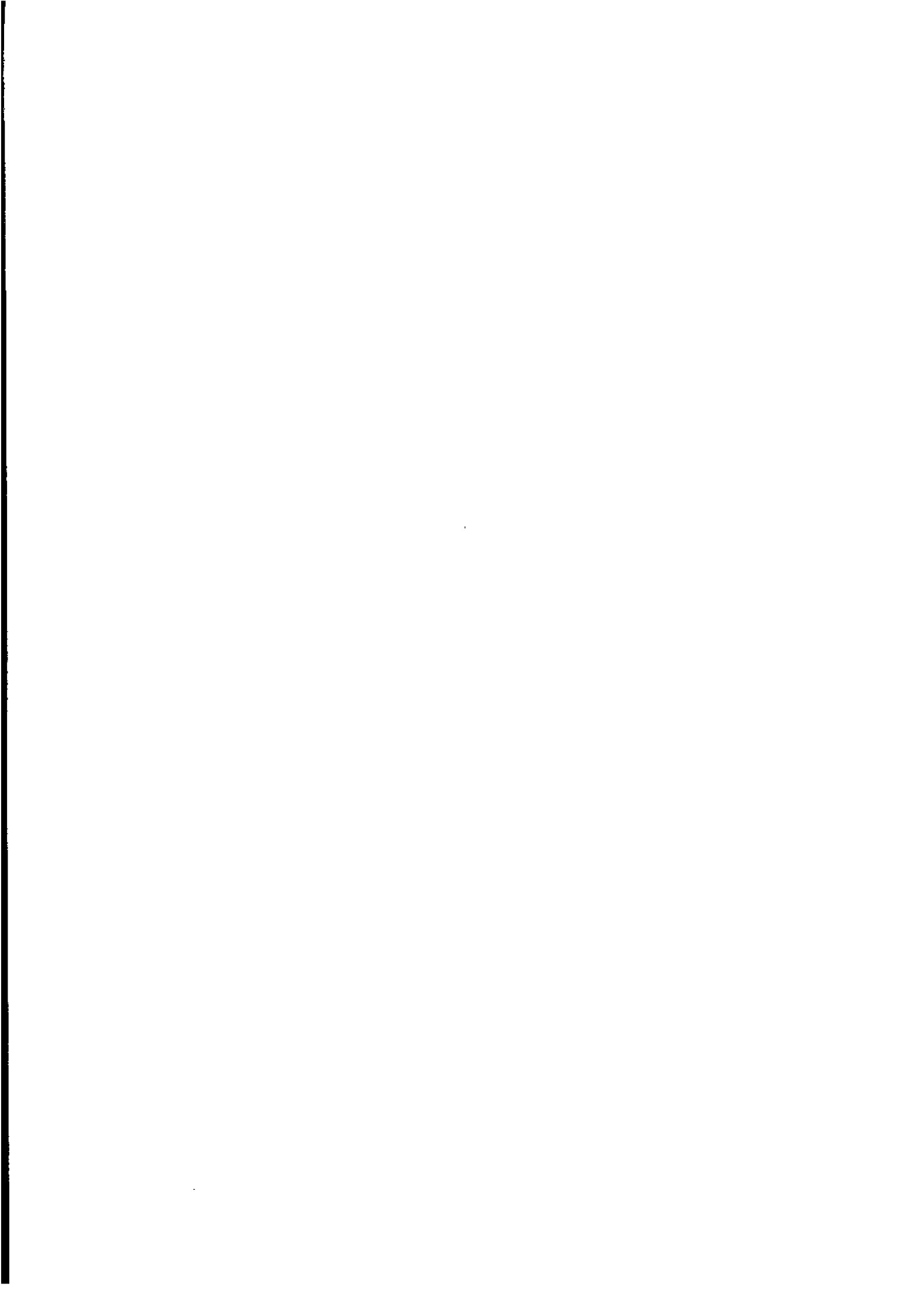
Employment	Per cent of business undertaking innovative activity				
	Product innovation	Process innovation	Technological innovation (subtotal)	Non technological innovation	One or more activities
Less than 5	4.9	6.9	9.6	9.3	16.1
5 - 9	9.3	9.6	13.6	16.4	24.3
10 - 19	14.4	17.0	22.8	29.7	37.6
20 - 99	12.9	18.3	22.9	35.3	43.5
Greater than 100	29.4	34.0	41.4	65.5	72.4
Total all selected industries	7.0	8.8	12.2	13.8	20.9

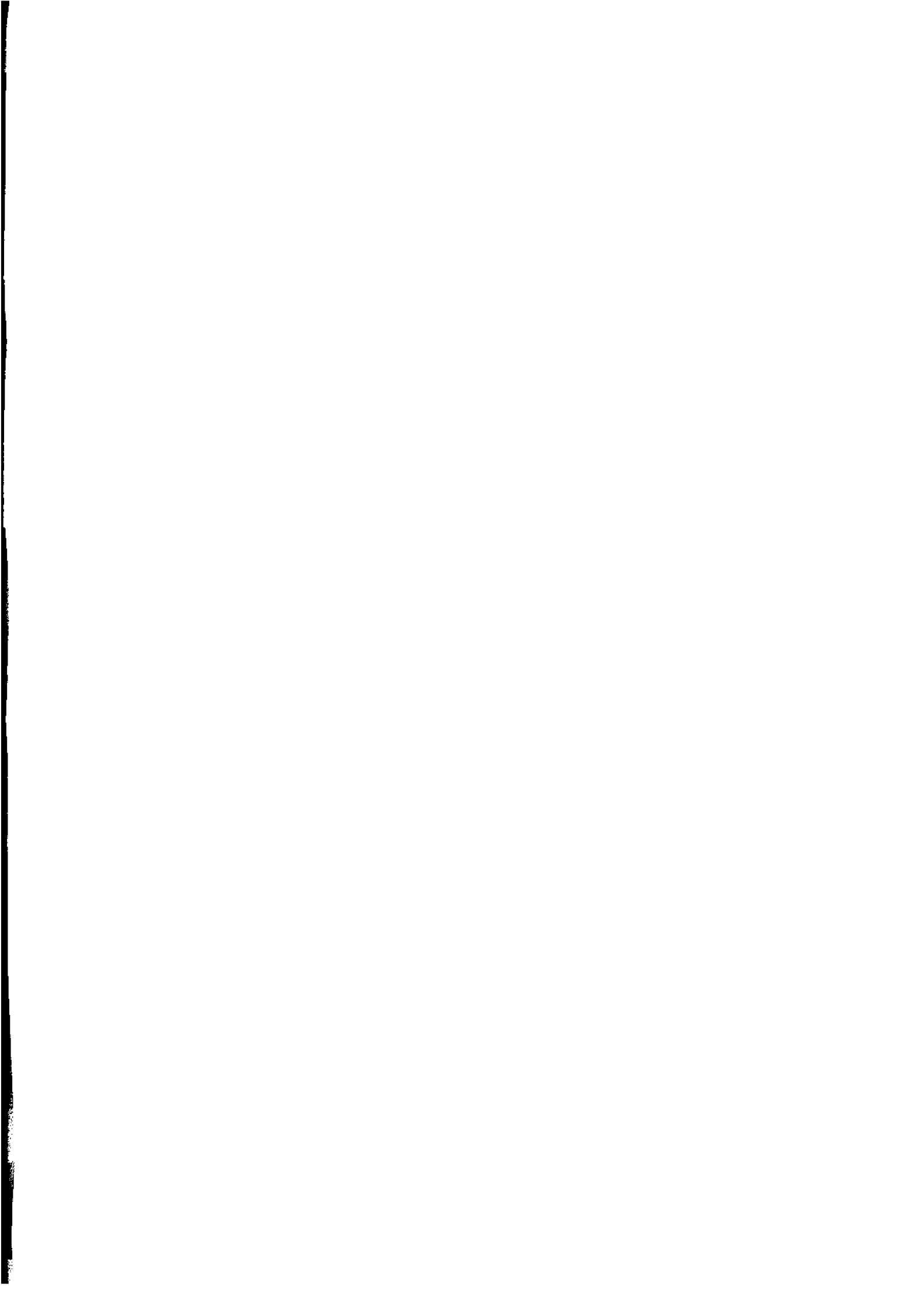
(a) Excludes Divisions (A) Agriculture, Forestry and Fishing and (M) Government, Administration and Defence. (b) Data for the Manufacturing industry for the reference period 1991-94

TABLE 4. INNOVATIVE STATUS BY INDUSTRY AND SIZE OF BUSINESS(a), 1993-94

ANZSIC code	Industry Division	Percentage of business by employment size									
		Innovators					Non-innovators				
		Less than 5	5 - 9	10 - 19	20 - 99	Greater than 100	Less than 5	5 - 9	10 - 19	20 - 99	Greater than 100
B	Mining	12.0	3.1	3.5	3.7	3.2	52.0	11.5	5.3	4.5	1.2
C	Manufacturing(b)	15.6	10.1	7.0	7.9	2.7	33.6	14.2	5.8	2.9	0.4
D	Electricity, Gas and Water Supply	24.1	4.1	4.1	8.2	10.0	24.3	13.7	4.4	6.4	0.9
E	Construction	9.4	2.4	1.9	0.7	0.1	74.7	7.0	2.9	1.0	0.1
F	Wholesale Trade	19.6	4.7	4.4	2.7	0.7	43.5	14.5	7.7	2.3	0.3
G	Retail Trade	7.8	5.9	2.3	0.9	0.2	56.8	22.6	1.7	1.8	0.1
H	Accommodation, Cafes and Restaurants	5.5	6.9	3.3	3.8	0.3	26.6	39.1	6.5	7.8	0.2
I	Transport and Storage	8.7	3.5	2.2	1.4	0.7	61.5	14.5	3.9	3.5	0.2
J	Communication Services	14.1	4.3	0.0	1.2	0.8	70.4	4.3	4.3	0.7	0.0
K	Finance and Insurance	7.5	2.2	0.9	1.5	0.7	77.3	6.4	1.9	1.1	0.3
L	Property and Business Services	11.5	2.9	1.9	1.0	0.4	62.8	12.7	4.5	2.2	0.1
N	Education	7.7	6.9	0.0	3.6	0.9	51.1	15.1	8.6	4.8	1.3
O	Health and Community Services	12.0	6.2	0.9	1.5	0.6	55.9	14.3	4.8	3.5	0.5
P	Cultural and Recreational Services	11.7	12.5	3.8	2.4	0.6	44.8	12.8	5.0	5.8	0.7
Q	Personal and Other Services	10.1	4.8	0.2	1.1	0.2	63.8	13.2	5.3	1.4	0.1
B-Q	Total all selected industries	10.8	5.0	2.5	2.0	0.6	56.5	15.6	4.2	2.5	0.2

(a) Excludes Divisions (A) Agriculture, Forestry and Fishing and (M) Government, Administration and Defence. (b) Data for the reference period 1991-94





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