

*Sensis® Business Index*  
*Special Report*  
*For the*  
*Department of Communications,*  
*Information Technology and the Arts*

**ICT Production  
in Australian SMEs**

July 2005



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# Introduction

The Sensis® *Business Index – Small and Medium Enterprises* is an ongoing series of surveys designed to track confidence and behaviour in the small business sector.

The primary objectives of the *Index* are to track small and medium business activity over the past three months; expectations over both the next three and 12 months; and to measure overall confidence within the small business community. A second purpose is to provide an independent, objective channel for reporting proprietors' experience and attitudes on key issues. The Sensis® *Business Index* is based on a sample size of 1,800 SMEs from metropolitan and regional areas of Australia.

The Sensis® *Business Index* enables broad scrutiny of the SME market, as well as an understanding of trends and issues relevant to this sector. It examines the differences in attitude and experience between regional and metropolitan SMEs, and between small and medium enterprises. The aim of the Sensis® *Business Index* is to reflect the attitudes and behaviour of approximately 99 per cent of the Australian SME business sector.

As part of the May 2005 Sensis® *Business Index*, questions were asked covering the production of information and communication technology (ICT) goods or services in SMEs. SMEs were asked whether they produced ICT goods or services, either for sale or for their own internal use, what ICT goods or services they produced, the value of ICT produced, the extent and value of ICT exports by SMEs, the production of software by SMEs and the extent of ICT specific employment.

For the purposes of this analysis, ICT goods and services included (but were not necessarily limited to) hardware, components, software, advice or consultancy on computers or software, database development, repair of high technology equipment and web design.

This report builds on similar research that was conducted in May 2004 to see the extent to which there had been change, and to investigate some new areas. Where relevant comparisons are made to the results from May 2004.

Another aspect of this research was to again test the hypothesis that ICT production was happening in industry sectors that were not traditionally considered ICT focused. To test this hypothesis, analysis by ANZSIC classification was performed. Another focus of this research was to see the extent of exports of ICT goods and services by SMEs. To investigate these linkages data was analysed by the export profile of firms. Both ANZSIC classification and export profile of firms are collected as standard components of the Sensis® *Business Index*.

The investigation of this hypothesis leads to two differing concepts: ICT producing SMEs, which are across any sector, and SMEs in the traditionally defined ICT sector. The sector that was traditionally defined as producing ICT was defined as including ANZSIC codes 2841, 2842, 2849, 2852, 4613, 4614, 4615, 7120, 7831, 7832, 7833 and 7834.

The *Sensis® Business Index* is an initiative of Sensis as part of its commitment to this vital business sector. Surveying was conducted by Sweeney Research between 18 April and 13 May 2005.

**This report was completed for the Australian Government Department of Communications, Information Technology and the Arts.**

## About the Survey

Since its inception in 1993, the *Sensis® Business Index* has been one of the most comprehensive and regular surveys of small businesses in Australia. Historically, the *Sensis® Business Index* has focused specifically on businesses employing 19 people or fewer. In November 2000 it was expanded to cover the medium business sector, while the regional and industrial sectors were also enhanced.

The May 2005 *Sensis® Business Index* results are based on telephone interviews conducted with 1,800 small and medium business proprietors. The sample size is divided between 1,400 small businesses and 400 medium businesses (the latter defined as businesses employing between 20 and 199 people).

Businesses interviewed for the May 2005 *Sensis® Business Index* were drawn from all metropolitan and major non-metropolitan regions within Australia. Quotas were set on geographical location and type of business in order to produce the standard sample structure shown below. Where replacement businesses are recruited, this sample structure is maintained.

At the analysis stage, results were weighted by selected Australian New Zealand Standard Industrial Classification (ANZSIC) divisions within the metropolitan and non-metropolitan region of each state and territory. This ensured the sample reflected the actual small and medium business population distribution. The Australian Bureau of Statistics (ABS) Business Register, as at June 1998, was used to weight the sample to be representative of the total business population.

Interviewing for this latest survey was conducted over the period 18 April to 13 May 2005.

Location of Business			
	Total	Metro	Non-metro
New South Wales	300	240	60
Victoria	300	240	60
Queensland	300	165	135
South Australia	225	195	30
Western Australia	225	195	30
Tasmania	150	90	60
Northern Territory	150	90	60
Australian Capital Territory	150	150	-
<b>Total</b>	<b>1800</b>	<b>1365</b>	<b>435</b>

Division	
Manufacturing	200
Building/Construction	250
Wholesale Trade	150
Retail Trade	250
Accommodation, Cafes and Restaurants	100
Transport/Storage	150
Finance and Insurance	100
Communication, Property and Business Services	300
Health and Community Services	150
Cultural, Recreational and Personal Services	150
<b>Total</b>	<b>1800</b>

# ICT Production in Australian SMEs

## EXTENT OF ICT PRODUCTION IN AUSTRALIAN SMEs

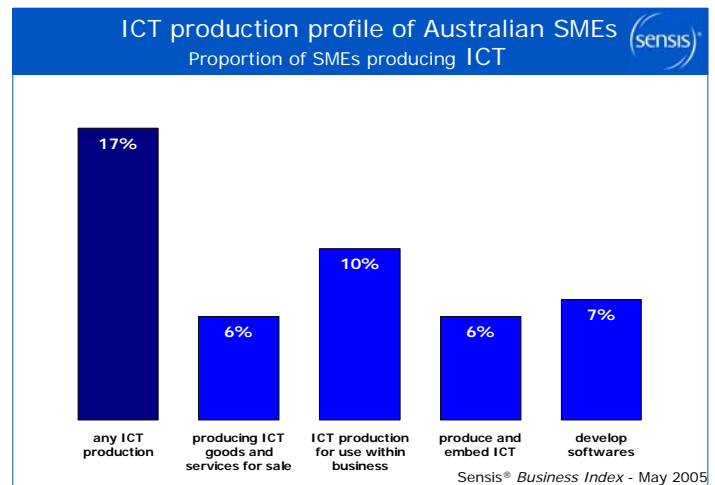
The May 2005 Sensis® *Business Index* found that overall 17 per cent of SMEs were involved in some form of production of information and communication technology (ICT) goods or services. This included:

- those firms that produced ICT goods and services for sale (six per cent of all SMEs);
- those firms that produced ICT for use within their business (ten per cent of all SMEs);
- those firms that produced ICT that was then embedded in non-ICT goods and services that they sold (six per cent of all SMEs); and
- those firms that developed software in the last two years (seven per cent of all SMEs).

Again, there was some overlap between these four categories, with some SMEs being involved in all facets of ICT production, while other SMEs were only involved in one area of production, but in total, 17 per cent of all SMEs reported at least some involvement in some facet of ICT production. This result was consistent with the 16 per cent of SMEs that were found to be involved in ICT production in May 2004.

Traditionally, ICT production has been thought of as predominantly occurring within the following ANZSIC codes: 2841, 2842, 2849, 2852, 4613, 4614, 4615, 7120, 7831, 7832, 7833 and 7834. The ICT sector, as defined by these ANZSIC codes, accounted for three per cent of the weighted sample of the May 2005 Sensis® *Business Index*.

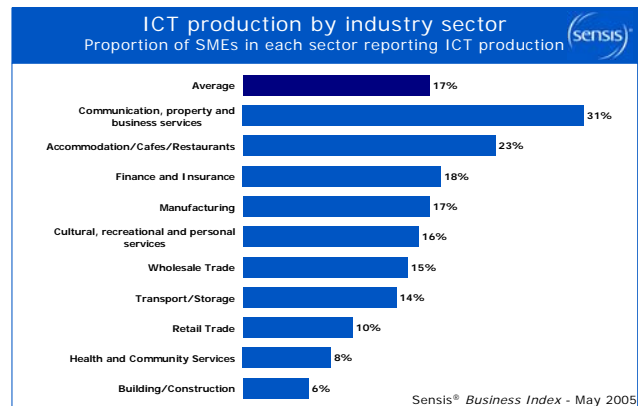
Interestingly, 81 per cent of firms in the ICT sector had been involved in any aspect of ICT production, an increase from 60 per cent in the May 2004 Sensis® *Business Index*. Some SMEs in the ICT sector that are not involved directly in ICT production may be involved with other aspects of the ICT industry, for example distribution of technology. Questions in this survey were aimed purely at identifying ICT production.



However, more importantly, of the ICT production that was found to occur in this survey, only 15 per cent of firms occurred within the ICT sector, with the vast majority, of 85 per cent of production occurring in firms outside the ICT sector. This was an increase from 11 per cent in May 2004. These findings are examined in greater detail in the following sections.

## INDUSTRY PROFILE OF ICT PRODUCING SMEs

The May 2005 Sensis® Business Index found that the industry sector with the highest proportion of SMEs reporting some level of ICT production, was again the communications, property and business services sector, where 31 per cent in that sector reported some level of involvement in at least one facet of ICT production. SMEs in the accommodation, cafes and restaurant sector, and the finance and insurance sector also reported levels of ICT production that were above average, with firms in the manufacturing sector reporting average levels of ICT production.



Whilst SMEs in the ICT sector have a high propensity to produce ICT goods or services, the vast majority of the SMEs that had some involvement in ICT production appeared to be above the right looks at ICT producing SMEs by broad ANZSIC Division, Table 1 examines in detail the two-digit ANZSIC classification of ICT producing SMEs, to gain an understanding of the extent of sectoral involvement in ICT production. Note that in this table a percentage of zero indicates that SMEs involved in ICT production were identified in this sector, although at very low levels.

In line with last year's results, the business services sector still represents the highest concentration of ICT production on a sectoral basis. The other business services classification, which has the highest concentration of ICT producing SMEs includes four-digit ANZSIC classifications such as employment placement Services, security and investigative Services and contract packing Services, as well as various other business services that are not classified elsewhere in the ANZSIC code.

**Table 1 ANZSIC Classification of ICT producing SMEs**

ANZSIC Code	Percent
21 Food, beverage and tobacco manufacturing	2
23 Wood and paper product manufacturing	0
24 Printing, publishing and recorded media	1
25 Petroleum, coal, chemical and associated product manufacturing	*
26 Non-metallic mineral product manufacturing	*
27 Metal product manufacturing	*
28 Machinery and equipment manufacturing	*
29 Other manufacturing	*
41 General construction	*
42 Construction trade services	4
45 Basic material wholesaling	*
46 Machinery and motor vehicle wholesaling	*
47 Personal and household good wholesaling	4
51 Food retailing	*
52 Personal and household good retailing	11
53 Motor vehicle retailing and services	*
57 Accommodation, cafes and restaurants	5
61 Road transport	*
65 Other transport	*
66 Services to transport	3
67 Storage	*
71 Communication services	3
73 Finance	3
74 Insurance	*
75 Services to finance and insurance	*
77 Property services	*
78 Business services	39
781 Scientific research	*
782 Technical services	3
783 Computer services	14
784 Legal and accounting services	*
785 Marketing and business management services	14
786 Other business services	6
86 Health services	3
87 Community services	*
91 Motion picture, radio and television services	*
92 Libraries, museums and the arts	*
93 Sport and recreation	4
95 Personal services	*
96 Other services	*
<b>Total</b>	<b>100</b>

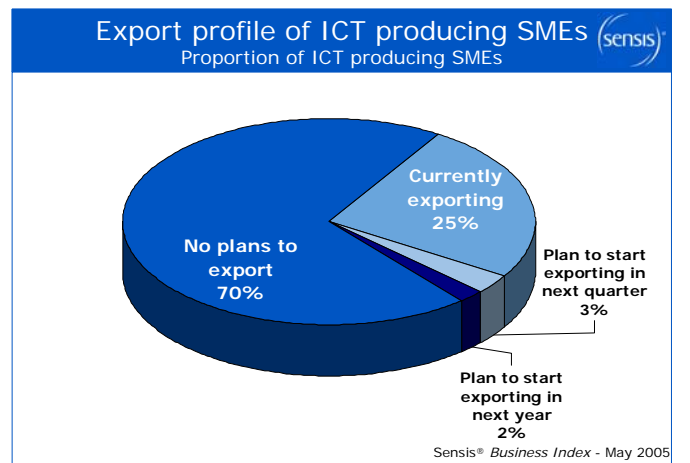
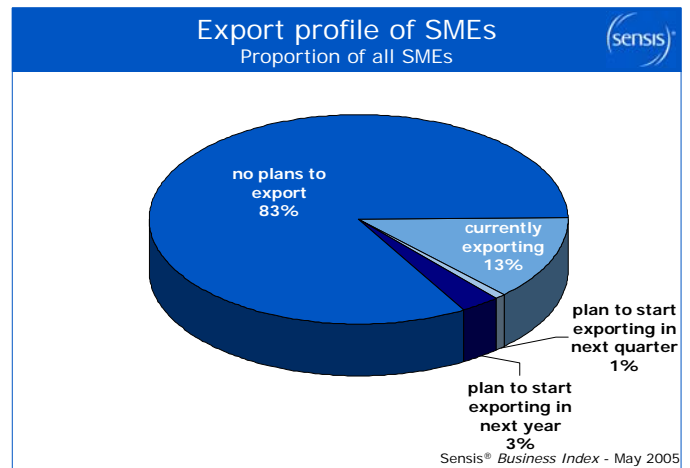
\* denotes result less than three per cent

## EXPORT PROFILE OF ICT PRODUCING SMEs

Looking at the SME population in total, in May 2005 13 per cent of SMEs reported having exported goods and services in the past quarter. In addition a further one per cent reported that they were planning on exporting in the current quarter, with an additional three per cent reporting an intention to export in the coming twelve months.

Keeping in mind the export profile for SMEs in general, it can be seen in the chart opposite that those SMEs that are involved in ICT production are more likely to export than SMEs on average. Overall, 25 per cent of ICT producing SMEs were currently exporting, which was relatively consistent with the 26 per cent that reported exporting last year. Nonetheless, the May 2005 Sensis® Business Index found the vast majority of these SMEs still had no plans to start exporting, though some small percentage indicated some interest to export either in the next quarter or the next year.

Table 2 presents a comparison between the ICT producing SMEs and those classified under the ICT sector. The export propensity of SMEs who had some level of ICT production was much higher than those who reported no ICT production. In particular, SMEs under the ICT sector showed a higher propensity to export, with 46 per cent of the SMEs were currently exporting, compared to 25 per cent for the ICT producing SMEs.



**Table 2 Export profile of SMEs by ICT production and for the ICT sector**

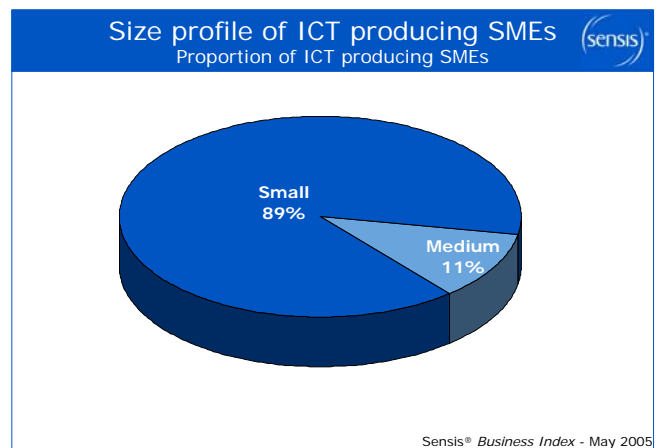
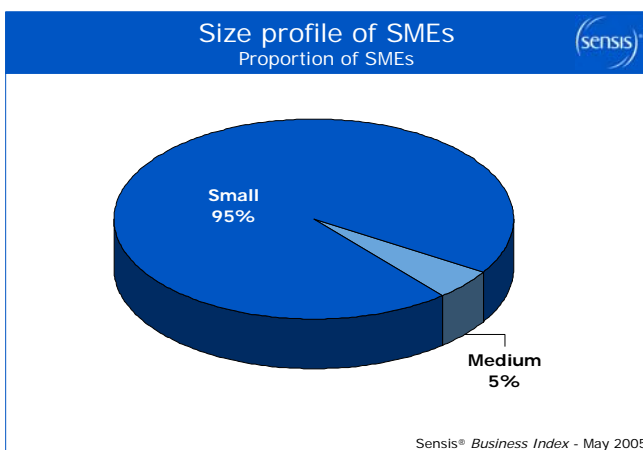
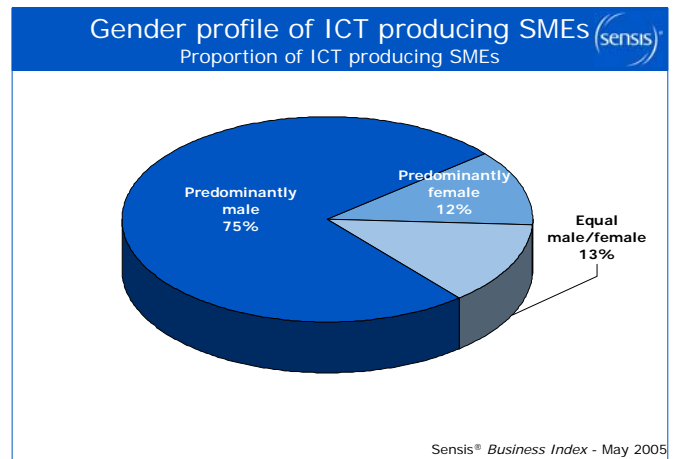
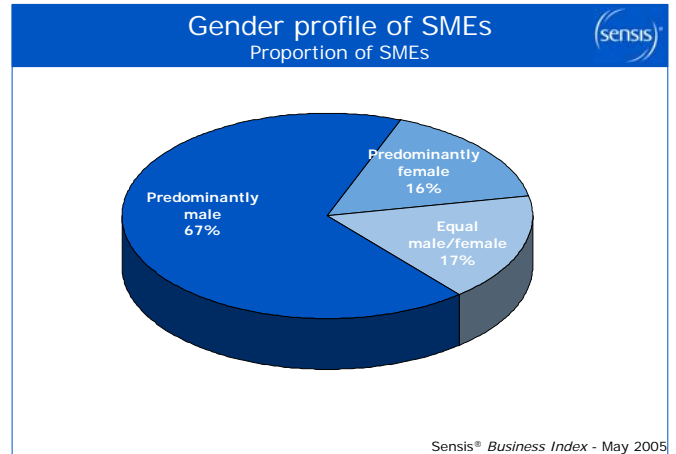
	Any ICT Production?		ICT Sector?		Average
	Yes	No	Yes	No	
Exported goods/services overseas in last three months	25%	10%	46%	12%	13%
Plan to start exporting in next three months	3%	1%	1%	1%	1%
Plan to start exporting in next twelve months	2%	3%	1%	3%	3%
No plans to start exporting	70%	86%	52%	84%	83%
Total	100%	100%	100%	100%	100%

## GENDER AND SIZE PROFILE OF ICT PRODUCING SMEs

It is interesting to examine some of the other characteristics of those SMEs that are involved with ICT production compared to the SME population in general to see how they differ.

The Sensis® Business Index asks SME proprietors whether or not they are the sole decision maker in that business, and records gender for the key decision maker. If there is more than one decision maker, gender is recorded on the majority gender of the key decision makers, or whether or not it is equally split, for example in the case of two decision makers, one being male and the other female. The May 2005 Sensis® Business Index found that ICT producing SMEs were more likely to be male-operated than SMEs in general (75 per cent compared to 67 per cent).

When looking at business size, using the definition of a small business as one with less than 20 employees and a medium business as one with from 20 to 199 employees, the May 2005 Sensis® Business Index found that ICT producing SMEs were more likely to be larger than the general SME population, with 11 per cent of ICT producing SMEs being medium-sized, compared to five per cent of SMEs on average.



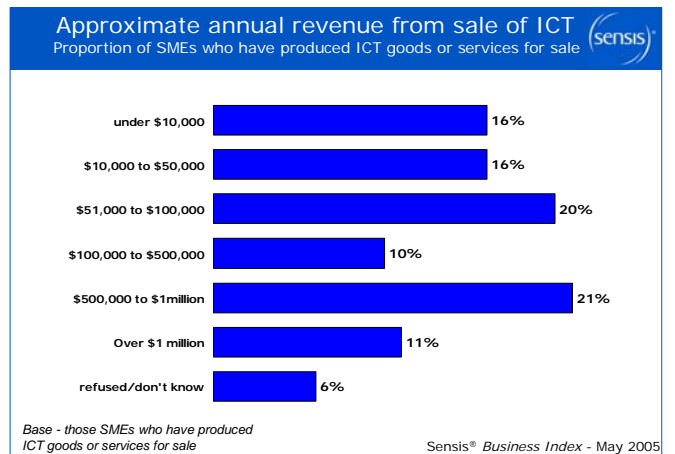
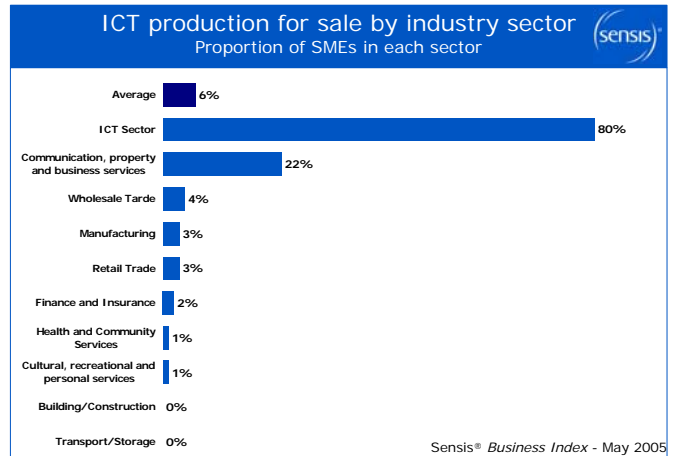
## ICT PRODUCTION FOR SALE

In order to provide SMEs with an idea of the breadth of goods or services that could be encompassed by the term ICT, SMEs were given examples of ICT production. These included hardware, components, software, advice or consultancy on computers or software, database development, repair of high technology equipment and web design, however, ICT production was not limited to these goods specifically.

When asked whether their business produced any ICT goods or services for sale, six per cent of all SMEs responded that they did, which was relatively consistent with the seven per cent that reported production in May 2004. Consistent with last year's findings, the communication, property and business services sector recorded the highest proportion of SMEs producing ICT for sale. This was followed by the wholesale trade sector, however at a much lower level of involvement.

The most frequent amount of revenue gained from the sale of ICT in the last twelve months was between \$500,000 and \$1,000,000. This compares to last year's finding where the most frequent amount of revenue was under \$10,000. This represents an increase in the overall revenue that SMEs are earning from the sale of ICT goods and services. This can particularly be seen in the proportion of SMEs that are earning over \$100,000 from the sale of ICT goods and services. In May 2005 42 per cent of ICT producing SMEs reported earning over \$100,000 from the sale of ICT goods and services, up from 32 per cent in May 2004.

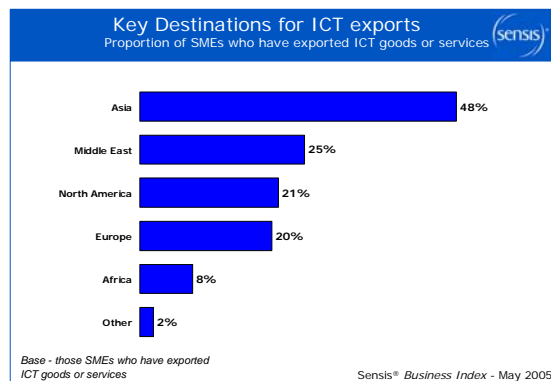
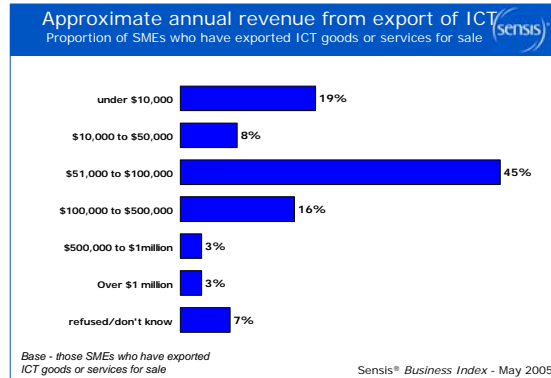
Using a midpoint calculation, the total amount of revenue from the sale of ICT goods and services produced by SMEs is in the vicinity of \$27.5 billion<sup>1</sup>, which is approximately three per cent of Australia's Gross National Income. As a very conservative estimate, using the lowest point of each revenue range, the total amount of revenue would be at least in the order of \$12 billion.



<sup>1</sup> This calculation assumes a midpoint value of production for each revenue range against a weighted base of 51037 firms, which was split as shown against the various revenue ranges.

Almost three-quarters (74 per cent) of SMEs who had produced ICT goods or services for sale had exported some of their products. The most common amount of revenue that SMEs had received for the export of ICT goods and services was between \$50,000 and \$100,000, reported by 45 per cent of SMEs who had exported ICT products.

The top export destination for SMEs that reported producing and exporting ICT goods or services was Asia, reported by 48 per cent of these SMEs, followed by the Middle East and North America, where 25 per cent and 21 per cent of ICT producing and exporting SMEs exported respectively. Examples that were fairly common amongst SMEs in this area were heavily service oriented, with computer and communications consultancies, often including aspects of software and website design to Asian destinations being among the most common.



**Table 3 ICT items produced for sale by SMEs**

Base – those SMEs who produced ICT goods or services for sale in each sector (an average of six per cent of all SMEs)

ICT ITEMS PRODUCED	AVERAGE	INDUSTRY SECTOR								
		Manufacturing	Construction	Wholesale trade	Retail trade	Communications, property and business services	Finance and insurance	Health and community services	Cultural, recreational and personal services	
Computer and data processing services (eg website design, software services etc)	77%	*	*	*	*	*	*	*	*	
Computer consultancy services	44%	*		*	*	*	*	*	*	
Packaged and customised software	36%	*	*	*	*	*	*	*	*	
Hardware and software maintenance	30%	*	*	*	*	*	*	*	*	
Computer Hardware	26%	*		*	*	*	*	*	*	
Information storage and retrieval services	24%	*		*	*	*	*	*	*	
Electronic equipment	24%	*	*	*	*	*	*	*	*	
Telecommunication services	17%	*		*	*	*	*	*	*	
Installation and cabling services	17%		*	*	*	*	*	*	*	
Communications hardware	17%	*		*	*	*	*	*	*	
Computer and communications parts and components (eg circuit boards, chips etc)	15%	*			*	*	*	*	*	
Computer and communications consumables (eg. Floppy disks, cds, tonner cartridges, etc)	10%			*	*	*	*	*	*	
Software programs	3%	*				*	*	*	*	
Other	11%				*	*	*	*	*	

\* indicates a sector nominating that item of ICT production

## ICT PRODUCTION FOR INTERNAL USE

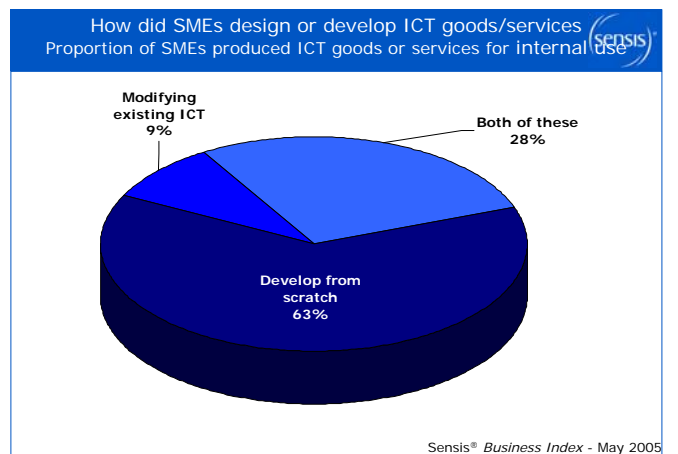
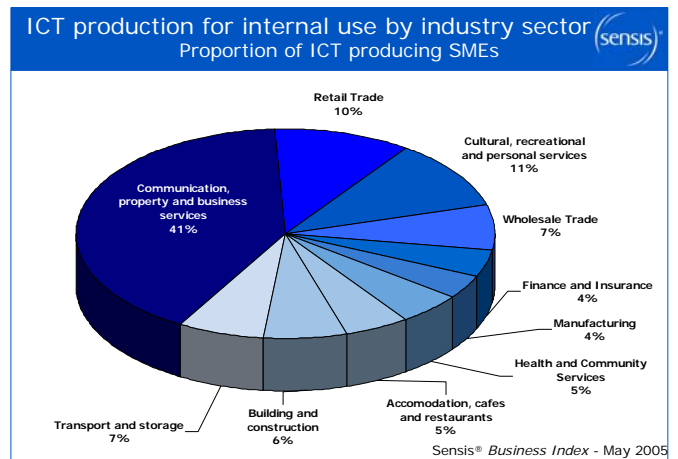
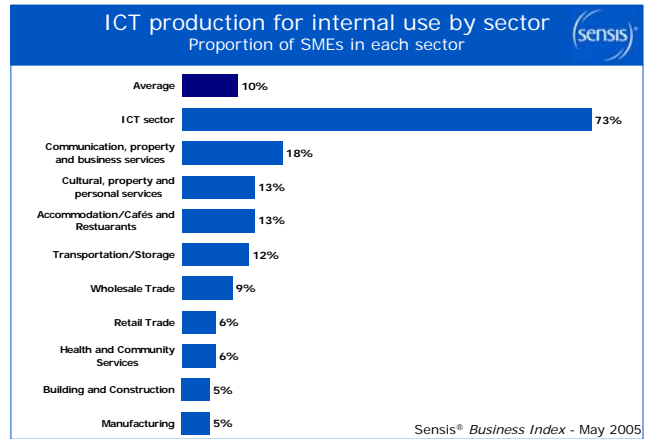
When asked whether their business produced any ICT goods or services specifically for use within their business, ten per cent of SMEs responded that they did, an increase from seven per cent for the previous year. Whilst there was some production in all sectors, the communication, property and business services sector was again the sector with the greatest propensity for ICT production for internal use, with 18 per cent of SMEs in that sector reporting that they produced ICT for internal use.

The items most frequently produced for internal use was website design, which was nominated by 28 per cent of firms that had produced ICT for internal use. The next most frequently produced item was customised software closely followed by database maintenance services.

At the industry level, the May 2005 Sensis® Business Index found that the communication, property and business services sector represented the highest proportion of ICT production for internal use at 41 per cent, which was a marginal increase from 38 per cent from the previous year.

The vast majority of SMEs who had produced ICT goods and services for their own internal use had developed these products internally, with only 15 per cent reporting having outsourced this production to an external provider. Of the 85 per cent of SMEs that had developed ICT internally, the survey found that a large proportion had designed or developed these ICT goods and services from scratch, as shown in Table 5. With the exception of the building and construction and health and community services sectors, a majority of SMEs in all other industry sectors reported having developed or designed their ICT goods from scratch. Overall, some 28 per cent reported employing a combination of modifying existing ICT and/or developing it from scratch as part of their ICT production.

Of these SMEs, 37 per cent reported that the estimated value of their innovations was under \$10,000, with 35 per cent reporting a value from \$10,000 to \$100,000 and 14 per cent reporting a value of over \$100,000. Innovations in the finance and insurance sector were most likely to be estimated at over \$100,000.



**Table 4 ICT items produced for internal use by SMEs**

Base – those SMEs who produced ICT goods or services for internal use in each sector (an average of ten per cent of all SMEs)

ICT ITEMS PRODUCED FOR INTERNAL USE	AVERAGE	INDUSTRY SECTOR									
		Manufacturing	Construction	Wholesale trade	Retail trade	Transport/storage	Communications, property and business services	Finance and insurance	Health and community services	Cultural, recreational and personal services	Accommodation, cafes and restaurants
Website design	28%	*	*	*	*	*	*	*	*	*	*
Customised software	17%	*	*	*	*	*	*	*	*	*	*
Database maintenance	15%	*	*	*	*	*	*	*	*	*	*
Brochures/advertising material	13%	*	*				*		*	*	*
Finance	7%			*		*	*	*	*		
Spreadsheets	6%	*			*	*	*	*		*	*
Customer relationship management	5%						*			*	
Information storage and retrieval services	5%			*	*		*		*	*	
Data management	4%				*	*	*		*	*	
Hardware and software maintenance	4%			*	*	*	*			*	
Computer system	4%			*		*	*				
Intranet	3%	*				*	*	*			
Computer and communications parts and components	2%						*				
Other	15%	*		*	*	*	*	*	*	*	*

\* indicates a sector nominating that item of ICT production

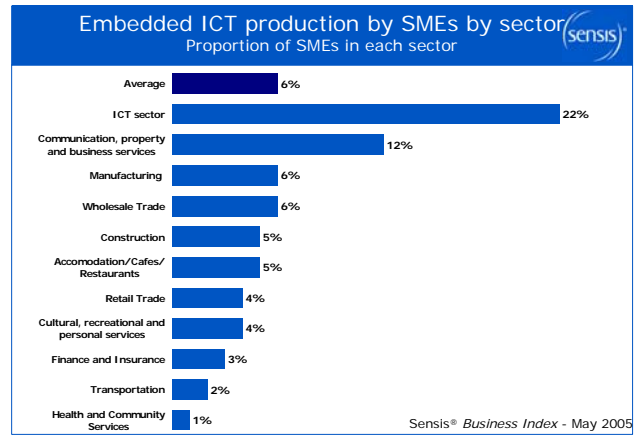
**Table 5 Internal design and development of ICT goods or services used internally by SMEs**

Base – those SMEs who produced ICT goods or services for internal use in each sector

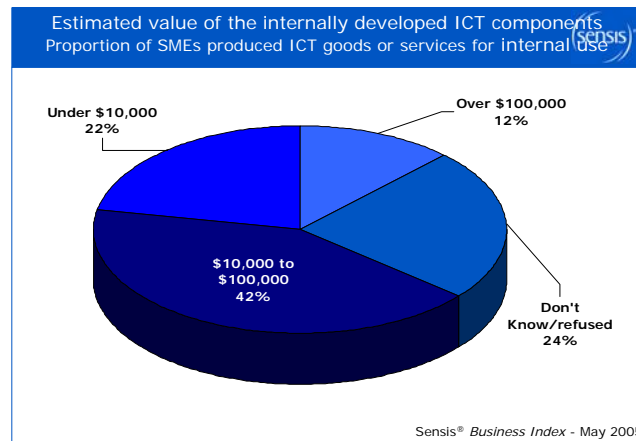
How did SMEs design or develop ICT goods for internal use	AVERAGE	INDUSTRY SECTOR									
		Manufacturing	Construction	Wholesale trade	Retail trade	Transport/storage	Communications, property and business services	Finance and insurance	Health and community services	Cultural, recreational and personal services	Accommodation, cafes and restaurants
Develop from scratch	63%	92%	4%	95%	51%	71%	70%	75%	35%	49%	73%
Modifying existing ICT products	9%	4%	3%	3%	27%	17%	7%		37%	9%	
Both of these	28%	4%	93%	3%	23%	12%	23%	25%	28%	42%	27%

## PRODUCTION OF EMBEDDED ICT

Overall, the May 2005 Sensis® Business Index found that six per cent of SMEs produced ICT goods or services that they were embedded in another non-ICT good or service which they sold. SMEs that were located in the ICT sector were far more likely to have produced embedded ICT than average (22 per cent compared to six per cent on average). The communication, property and business services recorded an above average share of their embedded ICT production, whilst other sectors were less likely to have embed ICT goods and services in non-ICT good and service sold by SMEs.



ICT that was produced by SMEs and embedded resulted in a wide array of end products. The majority of SMEs nominated consultancy work as well as other various equipments as their main end-product. There were numerous other products that SMEs mentioned, ranging from education and training services, CDs and DVDs, software services and gaming equipment.



The main types of ICT components that were produced and embedded in these items included software (31 per cent), website related activities (22 per cent), circuit components (10 per cent) and CDs/DVDs (10 per cent). Some 42 per cent of SME estimated that the value of embedded ICT components ranged from \$10,000 to \$100,000, with a smaller percentage (12 per cent) reporting the value of these components to be over \$100,000, and 22 per cent reporting an estimated value of under \$10,000.

The main method for SMEs to produce embedded ICT components, was the purchase of components off the shelf (70 per cent). Whilst the majority of the sectors reported strong preference for this method, the survey found that half of the SMEs in the manufacturing sector reported developing these ICT components internally. Of those SMEs that had developed embedded ICT components internally, two-thirds (66 per cent) had developed the components from scratch, whilst 19 per cent had modified existing components and 14 per cent had done both from time to time.

**Table 6 End products containing embedded ICT components produced by SMEs**

Base – those SMEs who produced ICT goods or services to embed in end-products in each sector (an average of six per cent of all SMEs)

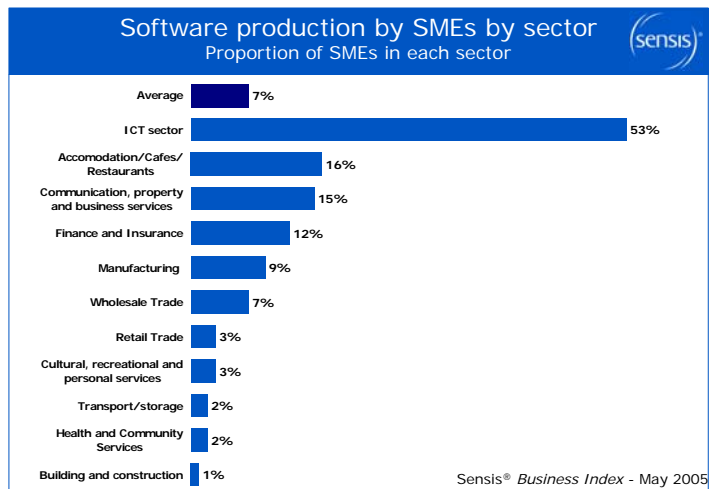
END PRODUCTS CONTAINING EMBEDDED ICT COMPONENTS	AVERAGE	INDUSTRY SECTOR								
		Manufacturing	Construction	Wholesale trade	Retail trade	Transport/storage	Communications, property and business services	Finance and insurance	Health and community services	Cultural, recreational and personal services
Consultancy Work	15%			*	*	*	*	*		
Various equipments	15%	*	*		*		*			
Internet/ web based	12%						*			
Engine	11%		*	*						
CDs / DVDs	8%	*			*	*			*	*
Education / Training	5%			*		*	*			*
Various software	5%	*		*	*		*	*		*
Various electronic	5%	*			*		*			
Electrical machinery	4%			*	*					
Hardware	2%	*					*			*
Control System	2%	*	*				*			
Digital Copiers	2%	*			*					
Database Systems	2%		*	*			*			
Electrical equipment	1%		*		*					
Gaming equipment	1%	*								
Management systems	1%				*	*				
Multi function	1%									*
Kilns	1%	*								
Computers	1%				*	*				
Controllers	1%	*		*						
Various components	1%	*		*						
Motor Vehicles	0%				*					
Financial Plans	0%						*			
Printer	0%	*								
Switches	0%	*								
Other	16%	*	*	*			*			*
Don't know	0%	*								

\* indicates a sector nominating that item of ICT production

## SOFTWARE DEVELOPMENT

The May 2005 Sensis® Business Index found that seven per cent of SMEs engaged in some form of software development in the last two years, with the accommodation, cafes and restaurants sector having the highest level of involvement (16 per cent).

The main reason that SMEs had developed software in the past two years was for their internal use (86 per cent). The other reason given by 46 per cent of SMEs that had produced software was that they had done it for external sale. While most software development was for internal, 33 per cent of SMEs estimated that the value to their business of the software development had been under \$10,000, with 32 per cent estimating a value between \$10,000 and \$100,000 and 22 per cent estimating a value of over \$100,000.

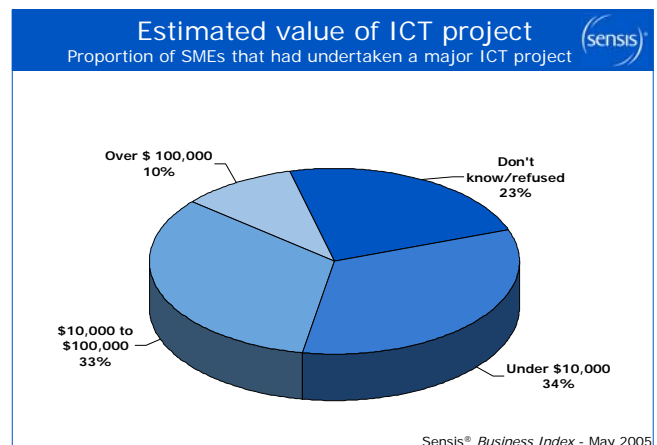
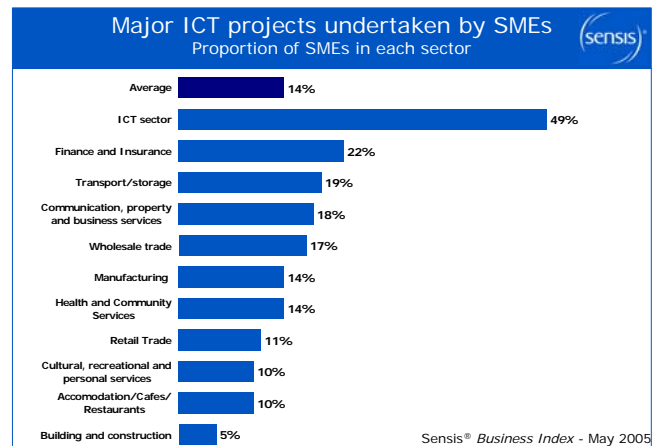


## MAJOR ICT PROJECTS

When asked whether their business had undertaken a major ICT project to improve internal operation in the last four years, 14 per cent of SMEs responded that they had. SMEs engaged in software development had a higher propensity to undertake a major ICT project (46 per cent) over the past four years. SMEs in the finance and insurance sector were most likely to have undertaken a major ICT project (22 per cent).

The most popular ICT projects undertaken by SMEs in the past year were system upgrades (21 per cent); software upgrades (19 per cent); hardware upgrades (16 per cent); and networking (11 per cent). Some 48 per cent of these projects were fully outsourced, with 24 per cent being partly outsourced and 28 per cent being undertaken in house.

Increased efficiency was overwhelmingly the main benefit of ICT projects reported by SMEs (61 per cent). Ten per cent of the SMEs indicated that their major ICT project was estimated to worth more than \$100,000, whilst the vast majority of these projects were estimated to worth less than \$100,000 (67 per cent). Some 28 per cent of SMEs reported that all their expectations had been met in the



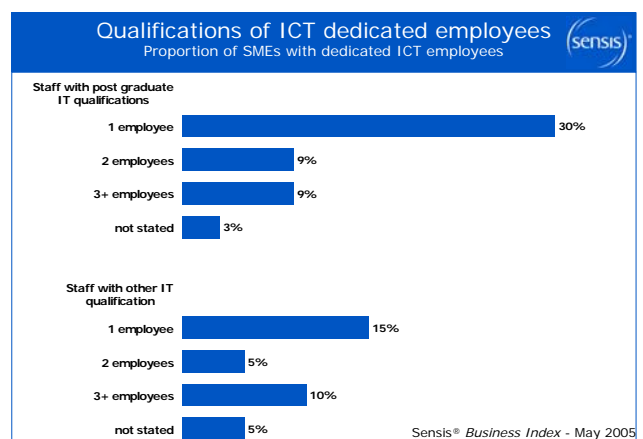
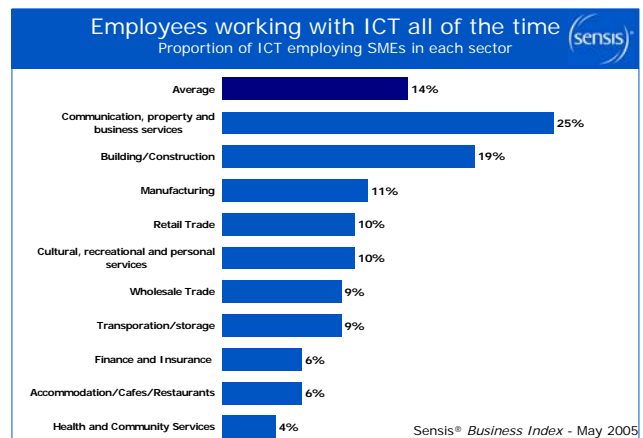
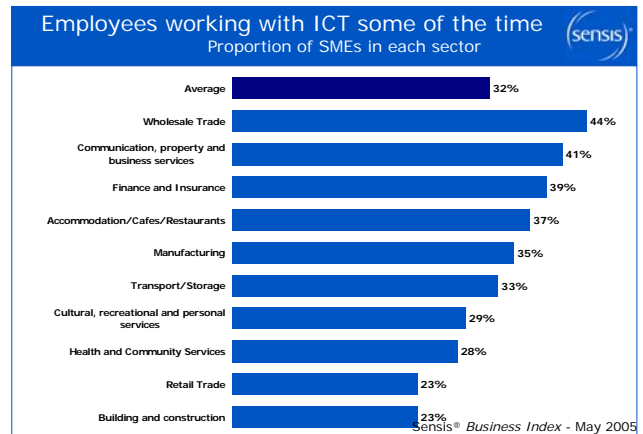
## ICT SPECIFIC EMPLOYMENT IN SMEs

The May 2005 Sensis® Business Index found that 39 per cent of SMEs reported having employees with some involvement with ICT. The survey broke these employees into two categories: those who were dedicated to ICT on a full-time basis, and those who worked with ICT some of the time, along with other tasks. The survey found that almost one-third (32 per cent) of SMEs reported having some employees that are involved with ICT for part of their time, and 14 per cent that have employees dedicated to ICT on a full time basis.

The main occupation of employees that were dedicated to ICT was that of a program development officer (13 per cent). This was followed by an IT technician, web developer and director/managing director (9 per cent each).

Likewise, the type of tasks that ICT dedicated staff were undertaking was broad. Some 15 per cent of SMEs who had ICT dedicated employees, reported that they were involved in financial administration and management and production. Other frequently reported tasks included software installation (13 per cent), designing and updating websites (10 per cent) installation, preparation or writing of software (10 per cent), maintaining internal networks (8 per cent), programming systems (8 per cent), monitoring of emails (8 per cent) and research and information (8 per cent). Furthermore, there was a broad range of other tasks that were mentioned less frequently, which ranged from the sales marketing to help-desk assistance.

Of those SMEs that had employees solely dedicated to ICT, in 51 per cent of SMEs at least one of these employees had an IT postgraduate qualification. Some 35 per cent of SMEs with dedicated ICT staff had at least one of these staff with some other form of IT qualification.



**Table 7 Main tasks for ICT-dedicated employees***Base – those SMEs who had ICT dedicated employees (an average 13 per cent of all SMEs)*

MAIN TASK	Percentage of SMEs with ICT dedicated employees
Financial administration/production/management	15%
Software installation/preparation/writing	13%
Design and update websites	10%
Maintaining internal network	8%
Monitoring e-mails	8%
Programming systems	6%
Graphic/artistic design/visual information	6%
Support NFI/troubleshooting	6%
Computer maintenance	6%
Data entry	5%
Offering advice/consultancy	5%
Marketing	5%
Looking after server/systems	5%
Help desk/assistance	4%
Hardware/installing/preparation/writing	4%
Research and information	4%
Sales NFI	4%
Sell telephone system	3%
Others	12%

**Table 8 Occupations of employees involved with ICT***Base – those SMEs who had employees involved with ICT (an average 39 per cent of all SMEs)*

OCCUPATION	Percentage of SMEs who had employees involved with ICT
Program Development Officer	13%
IT Technician	9%
Director/managing director	9%
Web development	9%
Admin/office work	8%
Graphic designer	5%
Engineer	6%
Secretarial	6%
Various Management	4%
IT consultant	3%
Sales	2%
Owner	2%
Business manage/officer manage	2%
Electrician	2%
IT manager	1%
Consultant NFI	1%
Accountant	1%
Others	4%

# Appendix 1 - Questions

WE ARE INTERESTED IN WHETHER YOUR COMPANY ITSELF IS A PRODUCER OF INFORMATION OR COMMUNICATIONS TECHNOLOGY, COMMONLY REFERRED TO AS ICT. THIS CAN INCLUDE HARDWARE, COMPONENTS, SOFTWARE, ADVICE OR CONSULTANCY ON COMPUTERS OR SOFTWARE, DATA BASE DEVELOPMENT, REPAIR OF HIGH TECH EQUIPMENT, WEB DESIGN AND SO ON. ICT PRODUCTION CAN INCLUDE GOODS OR SERVICES PRODUCED FOR SALE AS WELL AS TECHNOLOGY YOU PRODUCE FOR YOUR OWN INTERNAL USE

<p>Q35a. Firstly, does your business produce any of these types of information and communications technology goods or services for sale?</p>	<p>(CONTINUE) YES ..... 1                  (GO TO Q36) NO ..... 2</p>
<p>b. What ICT goods or services do you sell?</p>	<p>COMPUTER HARDWARE ..... 1                  COMMUNICATIONS HARDWARE ..... 2                  ELECTRONIC EQUIPMENT ..... 3                  COMPUTER AND COMMUNICATIONS PARTS AND COMPONENTS (eg. Circuit boards, chips etc)..... 4                  COMPUTER AND COMMUNICATIONS CONSUMABLES (eg. Floppy disks, CDs, toner cartridges etc) ..... 5                  PACKAGED AND CUTOMISED SOFTWARE ..... 6                  COMPUTER AND DATA PROCESSING SERVICES (eg. Website design, software services etc) ..... 7                  INFORMATION STORAGE AND RETRIEVAL SERVICES... 8                  INSTALLATION AND CABLING SERVICES ..... 9                  HARDWARE AND SOFTWARE MAINTENANCE ..... 10                  COMPUTER CONSULTANCY SERVICES ..... 11                  TELECOMMUNICATIONS SERVICES ..... 12                  Other (Specify).....</p>
<p>c. And what was your approximate revenue from the sale of these goods and services in the past year?</p>	<p>Under \$10,000 ..... 1                  \$10,000 to \$50,000 ..... 2                  \$51,000 to \$100,00 ..... 3                  \$101,000 to \$500,000 ..... 4                  \$501,000 to \$1 million ..... 5                  Over \$1 million ..... 6                  (Refused/Don't know) ..... 7</p>

<p>d. <b>If Q7A = YES ASK D AND E – OTHERWISE GO TO Q36:</b></p> <p>Were any of these goods or services exported?</p>	<p>(GO TO E) YES..... 1                  (GO TO Q33) NO ..... 2</p>
<p>e. What was the approximate revenue from these exports?</p>	<p>Under \$10,000 ..... 1                  \$10,000 to \$50,000 ..... 2                  \$51,000 to \$100,00 ..... 3                  \$101,000 to \$500,000..... 4                  \$501,000 to \$1 million..... 5                  Over \$1 million ..... 6                  (Refused/Don't know) ..... 7</p>
<p>f. What were the key destinations of these exports?</p>	<p>Asia ..... 1                  Africa ..... 2                  Middle East ..... 3                  North America..... 4                  South America ..... 5</p>

<p>Q36a. Does your business produce any information and communications technology goods or services specifically for use within your business?</p>	<p>(GO TO B) YES ..... 1                  (GO TO Q37) NO ..... 2                  (GO TO Q37) DON'T KNOW ..... 3</p>
--	--

<p>b. What ICT goods or services do you produce for internal use?</p>	<p>COMPUTER HARDWARE ..... 1  COMMUNICATIONS HARDWARE ..... 2  ELECTRONIC EQUIPMENT ..... 3  COMPUTER AND COMMUNICATIONS PARTS AND COMPONENTS (eg. Circuit boards, chips etc)..... 4  COMPUTER AND COMMUNICATIONS CONSUMABLES (eg. Floppy disks, CDs, toner cartridges etc) ..... 5  CUSTOMISED SOFTWARE..... 6      Supply chain management ..... 6a      Enterprise resources planning system..... 6b      Customer relationship management..... 6c      Product lifecycle management ..... 6d      Data management..... 6e      Business intelligence ..... 6f      Finance ..... 6g      Asset management ..... 6h      Managerial control systems..... 6i  INFORMATION STORAGE AND RETRIEVAL SERVICES 7  INSTALLATION AND CABLING SERVICES ..... 8  HARDWARE AND SOFTWARE MAINTENANCE ..... 9  COMPUTER CONSULTANCY SERVICES ..... 10  TELECOMMUNICATIONS SERVICES ..... 11  Other (Specify)..... 12</p>
<p>c. Did you develop these yourself?</p>	<p>(continue) YES ..... 1  (GO TO Q37) NO ..... 2</p>
<p>d. How did you develop these ICT goods and services?</p>	<p>INTERNAL INNOVATION ..... 1  MODIFY EXISTING ICT PRODUCTS..... 2  USING LICENSED IP (intellectual property) ..... 3</p>
<p>e. Can you estimate a dollar value to the business for the innovation(s)?</p>	<p>Under \$10,000 ..... 1  \$10,000 to \$100,000 ..... 2  Over \$100,000 ..... 3  Don't know/refused ..... 4</p>

<p>Q37a. Does your business sell any end products or services which are not ICT products or services in their own right – but which <b>contain ICT components</b> (either hardware or software) <b>which your business produces?</b></p>	<p>(GO TO b) YES ..... 1                  (GO TO Q38) NO ..... 2                  (GO TO Q38) DON'T KNOW ..... 3</p>
<p>b. What end products are these? (IDENTIFY UP TO 5)</p>	
<p>c. What ITC components do they include?</p> <p>.....</p> <p>.....</p>	
<p>d. Did you buy the ICT components off the shelf?</p>	<p>(GO TO 38) YES ..... 1                  (GO TO e) NO ..... 2</p>
<p>e. How did you develop these components?</p>	<p>INTERNAL DEVELOPMENT ..... 1                  INTERNAL MODIFICATION ..... 2                  EXTERNAL PROVIDER MODIFICATION ..... 2                  VARIES ..... 3</p>
<p>f. Can you estimate a dollar value to the business for the innovation(s)?</p>	<p>Under \$10,000 ..... 1                  \$10,000 to \$100,000 ..... 2                  Over \$100,000 ..... 3                  Don't know/refused ..... 4</p>

<p>Q38a. In the last two years have you developed any software?</p>	<p>(GO TO B) YES ..... 1                  (GO TO Q39) NO ..... 2</p>
<p>b. Why did you develop the software?</p>	<p>FOR INTERNAL USE ..... 1                  TO IMPROVE EXISTING PRODUCTS OR SERVICES                      CURRENTLY SOLD ..... 2                  TO CREATE A NEW ICT PRODUCT OR SERVICE ..... 3                  TO CREATE A NEW ICT PRODUCT TO EMBED IN                      NON-ICT PRODUCTS AND SERVICES ..... 4                  OTHER (SPECIFY) ..... 5</p>

c. Can you estimate a dollar value to the business for the innovation(s)?	Under \$10,000.....	1
	\$10,000 to \$100,000 .....	2
	Over \$100,000.....	3
	Don't know/refused.....	4

Q39a. In the last four years has your firm undertaken a major ICT project to improve internal operations?	(GO TO B) YES .....	1
	(GO TO Q40) NO .....	2

b. What was the nature of the project	
.....	
.....	

c. Was this ICT project outsourced?	YES .....	1
	NO.....	2
	PARTLY .....	3

d. What were the main benefits of the project?	INCREASED PROFITABILITY.....	1
	GREATER MARKET SHARE.....	2
	EASIER OR FASTER ACCESS TO INFORMATION.....	3
	IMPROVED INFORMATION FOR STRATEGIC PLANNING .....	4
	OTHER (SPECIFY).....	5

e. Can you estimate a dollar value to the business for the innovation(s)?	Under \$10,000.....	1
	\$10,000 to \$100,000 .....	2
	Over \$100,000.....	3
	Don't know/refused.....	4

f. On a scale of 0 to 5, where 0 is not at all and 5 where all expectations were met or exceeded, did the benefits from the project meet your expectations?	Record number: <input type="text"/>
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Q40a. Do you have any employees who are involved in information and communications technology activities within your business?	(GO TO B) YES .....	1
	(GO TO Classification) NO .....	2

b. Are they solely dedicated to information and communications technology?	(ASK C) YES .....	1
	(GO TO F) NO .....	2



c. What are their main information and communication technology-based activities?	
<p>.....</p> <p>.....</p> <p>.....</p>	
d. What are their main occupations?	
<p>.....</p> <p>.....</p> <p>.....</p>	
e. Are they involved in your firm’s innovation activities?	YES..... 1 NO .....2
f. How many employees have the following level of IT qualifications?	1. Postgraduate ..... <input type="checkbox"/> 2. Graduate ..... <input type="checkbox"/> 3. TAFE..... <input type="checkbox"/> 4. Vendor certification ..... <input type="checkbox"/> 5. No formal qualification ..... <input type="checkbox"/>
<b>RECORD NUMBER OR DON’T KNOW</b>	

## Appendix 2 – Relevant ANZSIC codes

This report refers to codes from the Australian and New Zealand Standard Industrial Classification (ANZSIC), as published by the Australian Bureau of Statistics. The codes listed below are provided to assist with the interpretation of the data in this report, but the inclusion of a code in this Appendix is not an indication that ICT production occurred within SMEs listed in these codes.

### Division C Manufacturing

- 21 Food, beverage and tobacco manufacturing
  - 211 Meat and meat product manufacturing
  - 212 Dairy product manufacturing
  - 213 Fruit and vegetable processing
  - 214 Oil and fact manufacturing
  - 215 Flour mill and cereal food manufacturing
  - 216 Bakery product manufacturing
  - 217 Other food manufacturing
  - 218 Beverage and malt manufacturing
  - 219 Tobacco product manufacturing
- 22 Textile, clothing, footwear and leather manufacturing
  - 221 Textile fibre, yarn and woven fabric manufacturing
  - 222 Textile product manufacturing
  - 223 Knitting mills
  - 224 Clothing manufacturing
  - 225 Footwear manufacturing
  - 226 Leather and leather product manufacturing
- 24 Printing, publishing and recorded media
  - 241 Printing and services to printing
  - 242 Publishing
  - 243 Recorded media manufacturing and publishing
- 25 Petroleum, coal, chemical and associated product manufacturing
  - 251 Petroleum refining
  - 252 Petroleum and coal product manufacturing n.e.c.
  - 253 Basic chemical manufacturing
  - 254 Other chemical product manufacturing
  - 255 Rubber product manufacturing
  - 256 Plastic product manufacturing
- 26 Non-metallic mineral product manufacturing
  - 261 Glass and glass product manufacturing
  - 262 Ceramic product manufacturing
  - 263 Cement, lime, plaster and concrete product manufacturing
  - 264 Non-metallic mineral product manufacturing n.e.c.
- 27 Metal product manufacturing
  - 271 Iron and steel manufacturing
  - 272 Basic non-ferrous metal manufacturing
  - 273 Non-ferrous basic metal product manufacturing
  - 274 Structural metal product manufacturing
  - 275 Sheet metal product manufacturing
  - 276 Fabricated metal product manufacturing
- 28 Machinery and equipment manufacturing
  - 281 Motor vehicle and part manufacturing
  - 282 Other transport equipment manufacturing
  - 283 Photographic and scientific equipment manufacturing
  - 284 Electronic equipment manufacturing
    - 2841 Computer and business machine manufacturing
    - 2842 Telecommunication, broadcasting and transceiving equipment manufacturing
    - 2849 Electronic equipment manufacturing n.e.c.
  - 285 Electrical equipment and appliance manufacturing
    - 2852 Electric cable and wire manufacturing
  - 286 Industrial machinery and equipment manufacturing
- 29 Other manufacturing
  - 291 Prefabricated building manufacturing
  - 292 Furniture manufacturing
  - 294 Other manufacturing

### Division E Construction

- 41 General construction
  - 411 Building construction
  - 412 Non-building construction
- 42 Construction trade services
  - 421 Site preparation services
  - 422 Building structure services
  - 423 Installation trade services
  - 424 Building completion services
  - 425 Other construction services

### Division F Wholesale trade

- 45 Basic material wholesaling
  - 451 Farm produce wholesaling
  - 452 Mineral, metal and chemical wholesaling
  - 453 Builders supplies wholesaling
- 46 Machinery and motor vehicle wholesaling
  - 461 Machinery and equipment wholesaling
    - 4613 Computer wholesaling
    - 4614 Business machine wholesaling n.e.c.
    - 4615 Electrical and electronic equipment wholesaling n.e.c.
  - 462 Motor vehicle wholesaling
- 47 Personal and household good wholesaling
  - 471 Food, drink and tobacco wholesaling
  - 472 Textile, clothing and footwear wholesaling
  - 473 Household good retailing
  - 479 Other wholesaling

### Division G Retail trade

- 51 Food retailing
  - 511 Supermarket and grocery stores
  - 512 Specialised food retailing
- 52 Personal and household good retailing
  - 521 Department stores
  - 522 Clothing and soft good retailing
  - 523 Furniture, houseware and appliance retailing
  - 524 Recreational good retailing
  - 525 Other personal and household good retailing
  - 526 Household equipment repair service
- 53 Motor vehicle retailing and services
  - 531 Motor vehicle retailing
  - 532 Motor vehicle services
- 57 Accommodation, cafes and restaurants
  - 571 Accommodation
  - 572 Pubs, taverns and bars
  - 573 Cafes and restaurant
  - 574 Clubs (hospitality)

### Division I Transport and storage

- 61 Road transport
  - 611 Road freight transport
  - 612 Road passenger transport
- 65 Other transport
  - 650 Other transport
- 66 Services to transport
  - 661 Services to road transport
  - 662 Services to water transport
  - 663 Services to air transport
  - 664 Other services to transport
- 67 Storage
  - 670 Storage

### Division J Communication Services

- 71 Communication services
  - 711 Postal and courier services
  - 712 Telecommunication services
    - 7120 Telecommunication services

### Division K Finance and Insurance

- 73 Finance
  - 731 Central bank
  - 732 Deposit taking financiers
  - 733 Other financiers
  - 734 Financial asset investors
- 75 Services to finance and insurance
  - 751 Services to insurance

**Division L Property and Business Services**

- 77 Property services
  - 771 Property operators and developers
  - 772 Real estate agents
  - 773 Non-financial asset investors
  - 774 Machinery and equipment hiring and leasing
- 78 Business services
  - 781 Scientific research
  - 782 Technical services
  - 783 Computer services
    - 7831 Data processing services
    - 7832 Information storage and retrieval services
    - 7833 Computer maintenance services
    - 7834 Computer consultancy services
  - 784 Legal and accounting services
  - 785 Marketing and business management services
  - 786 Other business services
    - 7861 Employment placement services
    - 7862 Contract Staff services
    - 7863 Secretarial services
    - 7864 Security and investigative services (except police)
    - 7865 Pest control services
    - 7866 Cleaning services
    - 7867 Contract packing services n.e.c.
    - 7869 Business Services n.e.c.
- 86 Health services
  - 861 Hospitals and nursing homes
  - 862 Medical and dental services
  - 863 Other health services
  - 864 Veterinary services
- 87 Community services
  - 871 Child care services
  - 872 Community care services
- 91 Motion picture, radio and television services
  - 911 Film and video services
  - 912 Radio and television services
- 92 Libraries, museums and the arts
  - 921 Libraries
  - 922 Museums
  - 923 Parks and gardens
  - 924 Arts
  - 925 Services to the arts
- 93 Sport and recreation
  - 931 Sport
  - 932 Gambling services
  - 933 Other recreational services
- 95 Personal services
  - 951 Personal and household goods hiring
  - 952 Other personal services
- 96 Other services
  - 961 Religious organisations
  - 962 Interest groups
  - 963 Public order and safety services

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