

76 Electronic computers

This Report on the Electronic Computer Industry relates to establishments engaged wholly or mainly in manufacturing digital, analogue and hybrid electronic computers and related equipment, including peripheral equipment for computing systems and data transmission equipment. Telecommunication links, and computers and peripheral equipment not separable from industrial control systems are excluded.

This industry corresponds to minimum list heading 366 in the Standard Industrial Classification (Revised 1968) which has been used for the first time as a basis of classification in the 1968 Census.

The industry formed part of the Radio and Other Electronic Apparatus Industry (Part 58) in the last detailed Census of Production for 1963.

Throughout this Report, the figures given for 1963 have been reclassified, as far as possible, according to the Standard Industrial Classification (Revised 1968) so that data for 1963 and 1968 are on the same industrial basis. However the reclassification of small firms, which provided limited information only, has been arbitrary.

In interpreting the data in the tables it is essential to bear in mind the notes and definitions which appear on pages (i) to (iv).

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(c) Including services rendered to other organisations (amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered).

(d) Administrative, technical and clerical employees.

(e) Excluding expenditure for establishments not yet in production.

(f) Acquisitions less disposals.

TABLE 1 Industry summary, 1963 and 1968
United Kingdom (a) (b)

	Unit	All establishments		
		1963	1968	
Number of enterprises	No.	32	55	
Number of establishments	"	48	72	
Gross output	£'000	40,255	118,504	
Net output	"	20,490	45,924	
Net output per head	£	1,963	2,410	
Sales and work done	goods produced and work done (c) merchanted goods and canteen takings	£'000	33,834	98,995
		"	6,293	11,790
Purchases	materials for use in production and packaging and fuel goods for merchandising and canteen purchases	"	8,621	53,386
		"	4,421	11,486
Payments to other organisations	for work done on materials given out for transport	"	6,916	6,928
	by road	"	38	102
	by rail and other means excluding postal services	"			19
Stocks and work in progress				
Total stocks and work in progress	change during year at end of year	"	+ 359	+ 7,061
		"	15,755	50,171
Goods on hand for sale	change during year at end of year	"	+ 441	+ 823
		"	1,681	2,088
Work in progress	change during year at end of year	"	- 313	+ 6,896
		"	11,513	32,226
Materials, stores and fuel	change during year at end of year	"	+ 231	- 658
		"	2,562	15,858
Number employed on average during the year	total, including working proprietors	Th.	10.4	19.1
	operatives	"	6.0	10.4
	other employees (d)	"	4.4	8.6
Wages and salaries	of operatives	£'000	3,658	9,112
	of other employees (d)	"	4,134	11,250
Capital expenditure (e)				
Total	"	1,145	6,010	
New building work	"	280	1,700	
Land and existing buildings (f)	"	- 475	145	
Plant and machinery (f)	"	1,300	4,082	
Vehicles (f)	"	40	83	

(a) For 1968, estimates for establishments not making satisfactory returns and for small establishments, from which only employment data were collected, accounted for 2 per cent. of the total figures in which they were incorporated: of this, unsatisfactory returns accounted for less than one per cent. A similar situation existed for 1963.

(b) The following information relates to small establishments (employing fewer than 25 persons) in this industry. It includes an estimate for small establishments not making satisfactory returns.

	1963	1968
Number of establishments	21	37
Average number employed		
Working proprietors	32	41
Other persons employed	181	384

Footnotes continued on page 76/2.

TABLE 2 Analysis by size of establishment within the industry, 1968

(i) Output and employment

All establishments: United Kingdom

Number employed on average during the year by the establishment (a)	Estab-lish-ments	Enter-prises (b)	Total number employed on average during the year (a)	Gross output	Net output	Net output per head
	Number	Number	Number	£'000	£'000	£
1-5	7	7	20	..	..	..
6-10	9	9	79	..	..	..
11-24	17	17	285	..	..	..
25-99	9	8	606	2,362	1,454	2,400
100-199	5	5	697	3,698	2,240	3,213
200-299	7	6	1,702	12,181	4,397	2,583
300 and over	13	4	15,544	97,207	36,631	2,356
Unsatisfactory returns	5	5	119	..	..	..
Total	72	55	19,052	118,504(c)	45,924(c)	2,410(c)

(ii) Employees, wages and salaries

All establishments: United Kingdom

Number employed on average during the year by the establishment (a)	Employees		Wages and salaries		Wages and salaries per head	
	Oper-atives	Others (d)	Oper-atives	Others (d)	Oper-atives	Others (d)
	Number	Number	£'000	£'000	£	£
1-5	..	..	..	..	..	..
6-10	..	..	..	..	..	..
11-24	..	..	..	..	..	..
25-99	358	243	337	327	940	1,346
100-199	443	248	371	348	837	1,402
200-299	978	724	859	989	878	1,366
300 and over	8,323	7,222	7,318	9,324	879	1,291
Unsatisfactory returns	..	..	..	..	..	..
Total	10,362(c)	8,638(c)	9,112(c)	11,250(c)	879(c)	1,302(c)

(a) Including working proprietors.

(b) The sum of the figures for the size groups exceeds the total for the industry to the extent that enterprises made returns for establishments in more than one size group.

(c) Including estimates for establishments employing fewer than 25 persons and for establishments not making satisfactory returns.

(d) Administrative, technical and clerical employees.

TABLE 3 Percentage analysis of employees, by age and sex, 1969 (a)

All establishments: United Kingdom

Ages	Males	Females	All employees
	Per cent.	Per cent.	Per cent.
Under 18	1	1	2
18 and over	71	27	98
All ages	72	28	100

Source: Department of Employment

(a) The percentages relate to the numbers employed (excluding working proprietors) at June 1969, the earliest date for which the information is available on the basis of the Standard Industrial Classification, (Revised 1968).

Footnotes to Table 4.

- (a) Some establishments employing fewer than 25 persons were included in returns for larger establishments. These amounted to 2 establishments in 1968 and 1 in 1963.
- (b) Including services rendered to other organisations (amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered).
- (c) This is the ratio of total sales of principal products by the industry to total sales of goods produced and work done.
- (d) Progress payments received for work in progress in 1968 from United Kingdom customers were recorded as £501,000 at beginning of year and £1,618,000 at end of year; and from overseas customers £87,000 at beginning of year and £116,000 at end of year. Similar information is not available for 1963.
- (e) Administrative, technical and clerical employees.
- (f) Excluding expenditure for establishments not yet in production.
- (g) Acquisitions less disposals.

TABLE 4 Analysis of larger establishments, 1963 and 1968

Establishments employing 25 or more persons: Analysis of returns received, United Kingdom (a)

	Unit	1963	1968	
Number of enterprises	No.	11	20	
Number of establishments	"	27	36	
Gross output	£'000	39,279	115,580	
Net output	"	19,994	44,791	
Net output per head	£	1,963	2,410	
Sales and work done	{ goods produced and work done (b)	£'000	33,014	96,553
	{ merchanted goods and canteen takings	"	6,140	11,499
Index of specialisation (c)	Per cent.	82	89	
Purchases	{ materials for processing and packaging, and fuel	£'000	8,412	52,069
	{ goods for merchenting and canteen purchases	"	4,314	11,202
Payments to other organisations	{ for work done on materials given out	"	6,748	6,757
	{ for transport	"	37	100
	{ by road	"		
	{ by rail and other means excluding postal services	"		19
Stocks and work in progress				
Goods on hand for sale	{ change during year	"	+ 430	+ 803
	{ at end of year	"	1,640	2,036
Work in progress (d)	{ change during year	"	- 306	+ 6,725
	{ at end of year	"	11,234	31,431
Materials, stores and fuel	{ change during year	"	+ 226	- 642
	{ at end of year	"	2,500	15,467
Number employed on average during the year	{ total, including working proprietors	No.	10,184	18,582
	{ operatives	"	5,879	10,128
	{ other employees (e)	"	4,304	8,443
Wages and salaries	{ of operatives	£'000	3,578	8,907
	{ of other employees (e)	"	4,045	10,996
Wages and salaries per head	{ operatives	£	609	879
	{ other employees (e)	"	940	1,302
Capital expenditure (f)				
New building work		£'000	274	1,658
Land and existing buildings	{ acquisitions	"	464(g)	142(g)
	{ disposals	"		
Plant and machinery	{ acquisitions	"	1,366	4,047
	{ disposals	"	68	66
Vehicles	{ acquisitions	"	46	105
	{ disposals	"	7	25

For notes to this table - see page 76/5

TABLE 5 Sales of principal products of the industry by larger establishments, including sales by establishments classified to other industries, 1963 and 1968

Establishments employing 25 or more persons: Analysis of returns received, United Kingdom

	1963	1968			
	Value	Value	Enterprises	Entries	
	£'000	£'000	Number	Number	
Electronic data processing and handling equipment (excluding complete control systems incorporating computers, data processing and handling equipment other than electronic and data handling equipment for diagnostic purposes) (a) (b)					
Digital computer systems	40,141	53,398	16	24	
Analogue/hybrid computer systems		3,123	13	14	
Data transmission equipment (excluding communication links) (c)		4,790	9	12	
Peripheral equipment not elsewhere specified					
Tape decks for use with electronic computers		10,819	5	10	
Other		45,502	42	55	
Waste products					
Scrap metals					
Iron and steel, and copper	4	6	*	*	
Brass	2	3	*	*	
Other scrap metals and waste products	8	11	*	5	
Work done					
Electronic computers installed and other installation work (d)	1,680	371	*	*	
Repair and maintenance work on customers' electronic computers, plant, apparatus and appliances, and other work done (e)					1,223	7	7
Total	41,834	119,246	..	..
Sales in other industries (see Table 6)	14,843	33,491	..	..
Principal products of this industry sold by establishments in the industry	26,991	85,755	20	30(f)	

(a) For 1963, described as 'Electronic data processing and handling equipment (including computers and machine tool position controls)'.
(b) For complete control systems incorporating computers, see the Scientific and Industrial Instruments and Systems Industry (Part 70); for data processing and handling equipment other than electronic, see the Office Machinery Industry (Part 57); and for data handling equipment for diagnostic purposes, see the Radio, Radar and Electronic Capital Goods Industry (Part 77).
(c) For communication links, see the Telegraph and Telephone Apparatus and Equipment Industry (Part 73).
(d) For 1963, described as 'Machinery purchased and installed and other installation work'.
(e) For 1963, described as 'Repair and maintenance work on customers' machinery, plant, apparatus and appliances'.
(f) This figure represents the total number of returns made for larger establishments in this industry which is less than the total number of establishments shown in Table 4 on account of combined returns covering more than one establishment.

TABLE 6 Sales of principal products of the industry by larger establishments classified to other industries, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	1963	1968		
	Value	Value	Entries	Principal industries in which produced (a)
Electronic data processing and handling equipment (excluding complete control systems incorporating computers, data processing and handling equipment other than electronic and data handling equipment for diagnostic purposes)	£'000	£'000	Number	
Analogue/hybrid computer systems	14,843	991	*	70,75,79,84
Tape decks for use with electronic computers		529	*	77
Digital computer systems, peripheral equipment other than tape decks for use with electronic computers, other electronic data processing and handling equipment, and installation, and repair and maintenance work on customers' electronic computers (b)		31,971	46	57,70,74,77
Total	14,843	33,491		

(a) The references given are to the list of industries at the front of this report.

(b) For 1963, excluding digital computer systems, peripheral equipment other than tape decks for use with electronic computers, and installation, and repair and maintenance work on customers' electronic computers.

TABLE 7 Sales of other than principal products by larger establishments in the industry, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	1963	1968
	Value	Value
Data processing and handling equipment (other than electronic), industrial control systems and equipment, security alarms and traffic control systems, and other manufactures not elsewhere specified (a)	£'000	£'000
Machinery, other than electronic computers, installed, repair and maintenance work on customers' plant, apparatus and appliances (except electronic computers), research and development work and services rendered to other organisations (b) (c)	6,022	8,112
Total value of goods sold without having been subjected to any manufacturing process (merchanted or factored)	6,140	2,686
Canteen takings		11,286
		213
Total	12,163	22,297

(a) For 1963, excluding data processing and handling equipment (other than electronic) and industrial control systems and equipment.

(b) For 1963, excluding machinery, other than electronic computers, installed and repair and maintenance work on customers' plant apparatus and appliances (except electronic computers).

(c) Services rendered to other organisations comprises amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered to other organisations.

TABLE 8 Production of certain principal products of the industry by larger establishments, 1963 and 1968

This table is not applicable to this industry.

TABLE 9 Purchases by larger establishments of selected principal products by the industry, 1968

This table is not applicable to this industry.

TABLE 10 Purchases by larger establishments in the industry, 1963 and 1968
Establishments employing 25 or more persons: Analysis of returns received, United Kingdom

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production	Th. tons	£'000	Th. tons	£'000
Steel				
Ingots, blooms, billets, slabs (including sheet/plate mill slabs and sheet bars)	-	-	..	23
Bars and rods (including wire rods), angles, shapes and sections, girders, beams, joists and pillars rolled (not fabricated), including tube rounds and squares	0.3	28	0.5 ..	55 12
Sheets under 3 mm. thick (including electrical sheets)	..	39	..	94
Iron and steel not elsewhere specified except finished parts, wire and scrap; steel wire and wire manufactures (including wire cables and ropes but excluding insulated wire and cables); springs, laminated and other types; plates, 3 mm. thick and over, hoop and strip (including tape of all thicknesses), forgings (except drop forgings), and castings	..	31	..	277
Light metals and non-ferrous metals in all forms except finished parts, wire and scrap				
Aluminium and aluminium alloys	0.1	37	0.3	165
Other light metals and non-ferrous metals	..	18	..	151
Solder, soft	..	9	..	18
Insulated wires, cables, strips and strands	..	172	..	1,045
Electrical insulating materials not elsewhere specified	..	7	..	31
Bolts, rivets, nuts and washers, screws, nails and tacks, etc	..	(a)	..	312
Electrical machinery				
Fractional horse-power motors (less than 1 hp)	..	87	..	836
Transformers and rectifying apparatus	..	137	..	447
Other electrical machinery	..		..	1,364
Electrical components not elsewhere specified				
Magnets, permanent	..	1	..	44
Semi-conductor devices	..	1,782	..	2,113
Valves, electronic (other than X-ray valves), electronic stabilising tubes and cathode ray tubes (excluding mercury pool rectifiers)	..	28	..	98
Capacitors	..		..	741
Resistors	..		..	981
Micro-circuits	..	2,466	..	3,379
Silicon transistors	..		..	1,388
Other electrical components	..		..	26,638
Other components for incorporation in firms' own products				
Ball and roller bearings and parts thereof	..	15	..	124
Measuring and control instruments (including ammeters, voltmeters, thermostats, etc)	..	108	..	406
Other components not elsewhere specified	..	2,450	..	6,375

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Lubricating oils and greases (including cutting oils and emulsions)	..	7	..	5
Replacement parts for firms' own machinery plant and vehicles, and accessories and consumable tools bought as replacement				
Tyres and other spare parts for firms' own road goods vehicles	..	122	..	15
Other	..		..	691
All other materials for use in production	..	539	..	3,423
Packaging materials				
Paper and board				
Boxes, cartons, drums and canisters (with or without metal ends) of paper and cardboard	..	14	..	46
Wrapping and packing paper (including paper coated with plastics and any laminates incorporating paper but not metal)	..		..	12
Other packaging materials of paper and paperboard (including moulded pulp units and labels, but excluding bags and multiwall paper sacks and paper and board for converting into packaging materials) (b)	..	6	..	3
Containers wholly or mainly of wood (including plywood boxes and drums other than cable drums), baskets and wickerwork crates (c)	..	70	..	49
All other packaging materials	..	23	..	41
Fuel and electricity (d)				
Coal (e)				
Derv fuel and motor spirit for use in road vehicles	..	64	..	59
Other liquid fuels (including creosote/pitch mixtures, etc and liquefied petroleum gases)	..		..	101
Gas	Th. therms		Th. therms	
Gas	197	22	599	56
Gas	..	7	..	7
Electricity	Th. kWh		Th. kWh	
Electricity	18,639	121	64,122	428
All other fuels	..	(a)	..	13
Total cost of materials and fuel		8,412		52,069
Goods purchased for merchanting		4,302		10,964
Canteen purchases		11		238
Total cost of purchases		12,725		63,271

(a) Not recorded separately for 1963.

(b) 'Paper and board for converting into packaging materials' was not specifically excluded for 1963.

(c) 'Cable drums' were not specifically excluded for 1963.

(d) There were no entries recorded for electricity generated in firms' own establishments in this industry in 1968 and 1963.

(e) For 1963, 'Coke (including screenings) and manufactured fuel' is included.

TABLE 11 Transport costs and employment of larger establishments, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	Unit	1963	1968
Average number mainly employed on transport	No.	65	111
Transport costs			
Wages and salaries	£'000	54	122
Derv fuel and motor spirit	"	14	59
Tyres and other spare parts for road goods vehicles	"	..	15
Payments to other organisations for transport	"	37	100
{ by road	"		
{ by rail and other means excluding postal services	"		19
Costs of operating road goods vehicles			
Insurance	"	2	8
Vehicle licences	"	3	12
Depreciation	"	16	41
Payments to other organisations for repairs and maintenance	"	1	12
Total	"	128(a)	386

(a) Excluding tyres and other spare parts for road goods vehicles, not collected separately for 1963.

TABLE 12 Payments for certain services, etc by larger establishments 1963 and 1968 (a)

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	Amounts payable	
	1963	1968
Repairs and maintenance to	£'000	£'000
Buildings	48	87
Road goods vehicles	1	12
Plant, machinery and other capital equipment	32	187
Insurance, licensing and depreciation of road goods vehicles (b)	21	61
Rates, excluding water rates	134	382
Hire of plant and machinery	64	74
Postage, telephone, telegrams, cables and telex (c)	93	295
Total	394	1,097

(a) No deduction is made for these payments to arrive at the figures of net output given in this report.

(b) For details see Table 11.

(c) Excluding telex for 1963.

TABLE 13 Percentage analysis of twelve-month periods covered by returns from larger establishments, 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

Year ended	Percentage of total returns received	Percentage of total number employed
1968	Per cent.	Per cent.
April (a)	6.7	1.7
May	0.0	0.0
June	3.3	1.3
July	0.0	0.0
August	0.0	0.0
September	23.3	49.6
October	0.0	0.0
November	0.0	0.0
December	46.7	43.3
1969		
January	6.7	2.2
February	0.0	0.0
March	13.3	1.9
April (b)	0.0	0.0
	100	100

(a) From 6 April.

(b) To 5 April.

