

TABLE 1

Business Enterprise Research and Development Survey aggregate estimates, by questionnaire reference: 2022

(Millions of U.S. dollars and thousands of employees)

Question	Survey item	Aggregate amount
Company and financial information (US\$millions)		
1.12	Worldwide net sales and operating revenues	18,865,332
1.13	Net sales and operating revenues from domestic operations	14,184,308
R&D paid for by the company and performed by the company and others		
2.1	Worldwide R&D paid for by the company (expense), total	847,676
2.3	Worldwide R&D paid for by the company (expense), adjustments	48,522
2.4/ 2.7c	Worldwide R&D paid for by the company and performed by the company and others	799,154
2.7a	Domestic R&D paid for by the company and performed by the company and others	653,547
2.7b	Foreign R&D paid for by the company and performed by the company and others	145,608
2.5	Indirect R&D charges to be recouped from the U.S. federal government (independent R&D [IR&D]) ^a	7,511
2.8m(1)	Domestic R&D paid for by the company and performed by the company and others	653,547
2.8a(1)	Salaries, wages, and fringe benefits	323,313
2.8b(1)	Stock-based compensation	70,482
2.8c(1)	Leased or temporary staffing, including on-site contractors, working on R&D	28,058
2.8d(1)	Expensed equipment (not capitalized)	10,260
2.8e(1)	Materials and supplies	36,945
2.8f(1)	Leased facilities and equipment	9,732
2.8g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	20,232
2.8h(1)	Royalties and licensing fees	3,580
2.8i(1)	Collaborative R&D payments	8,781
2.8j(1)	Contract R&D	36,708
2.8k(1)	Other purchased services	18,775
2.8l(1)	All other costs	86,682
2.9(3)	Worldwide R&D paid for by the company and performed by others	56,087
2.9(1)	Domestic R&D paid for by the company and performed by others	45,489
2.9(2)	Foreign R&D paid for by the company and performed by others	10,598
2.10(3)	Worldwide R&D paid for and performed by the company	743,067
2.10(1)	Domestic R&D paid for and performed by the company	608,058
2.10(2)	Foreign R&D paid for and performed by the company	135,009
2.9(3) + 2.10(3) + 3.4(3) + 3.5(3)	Worldwide R&D paid for by the company and others and performed by the company and others	906,644
2.10(3) + 3.5(3)	Worldwide R&D paid for by the company and others and performed by the company	841,131
2.9(1) + 2.10(1) + 3.4(1) + 3.5(1)	Domestic R&D paid for by the company and others and performed by the company and others	745,699
2.10(1) + 3.5(1)	Domestic R&D paid for by the company and others and performed by the company	691,547
Domestic R&D paid for and performed by the company		
2.14	Performed at largest domestic location	367,673
2.16	Performed at second-largest domestic location	55,782
2.18	Domestic R&D paid for by foreign operations or subsidiaries and performed by the company ^a	30,161
2.19	Foreign R&D paid for by domestic operations or subsidiaries and performed by the company ^a	26,924
Projected worldwide R&D expense paid for and performed by the company in 2023		
2.20(3)	Worldwide R&D to be paid for and performed by the company	860,437
2.20(1)	Domestic R&D to be paid for and performed by the company	705,424
2.20(2)	Foreign R&D to be paid for and performed by the company	155,013
2.21	Projected R&D services and projected payments for collaborative R&D	50,728
3.1j/ 3.2c	Worldwide R&D paid for by others and performed by the company and others	107,490
3.1a	R&D reimbursed by the company's foreign parent or owner	18,758
3.1b	Collaborative R&D reimbursed by business partners	10,597
3.1c	R&D paid for by grants (government or private foundation)	8,950

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3.1d	Defense R&D goods or services provided as a prime contractor or subcontractor to the federal government and/ or government contractors	23,829
3.1e	Medical clinical trial Phase I–III services provided to others not owned by the company	33,350 i
3.1f	Medical R&D services, other than clinical trials, provided to others not owned by the company	4,478
3.1g	Nondefense custom software development or computer systems designed for others not owned by the company	549
3.1h	Prototype development, production, and testing for customer's products	1,493
3.1i	All other R&D services provided to the federal government or to others not owned by the company	5,485
3.2c/ 3.1j	Worldwide R&D paid for by others and performed by the company and others	107,490
3.2a	Domestic R&D paid for by others and performed by the company and others	92,152
3.2b	Foreign R&D paid for by others and performed by the company and others	15,338 i
3.3m(1)	Domestic R&D paid for by others and performed by the company and others	92,152
3.3a(1)	Salaries, wages, and fringe benefits	46,597
3.3b(1)	Stock-based compensation	1,255
3.3c(1)	Leased or temporary staffing, including on-site contractors	2,923
3.3d(1)	Expensed equipment (not capitalized)	613 i
3.3e(1)	Materials and supplies	8,694
3.3f(1)	Leased facilities and equipment rental payments	1,179
3.3g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	2,325
3.3h(1)	Royalties and licensing fees	280
3.3i(1)	Collaborative R&D payments	2,258
3.3j(1)	Contract R&D	6,405
3.3k(1)	Other purchased services	4,366 i
3.3l(1)	All other costs	15,257
3.4(3)	Worldwide R&D paid for and performed by others	9,425
3.4(1)	Domestic R&D paid for and performed by others	8,663
3.4(2)	Foreign R&D paid for and performed by others	762
3.5(3)	Worldwide R&D paid for by others and performed by the company	98,064
3.5(1)	Domestic R&D paid for by others and performed by the company	83,489
3.5(2)	Foreign R&D paid for by others and performed by the company	14,575 i
3.8a	Other companies in the United States	27,125 i
3.8b	Your company's foreign parent or owner	21,005
3.8c	Other companies outside the United States	2,599
3.8d/ 3.11j/ 3.12c	U.S. federal government agencies or laboratories	31,626
3.8e	U.S. state and local government agencies or laboratories	208
3.8f	Foreign government agencies or laboratories	104
3.8g	U.S. universities, colleges, and academic researchers	38
3.8h	Universities, colleges, and academic researchers outside the United States	10
3.8i	All other organizations in the United States	720
3.8j	All other organizations outside the United States	52
3.8d	Federally funded R&D performed by the company	31,626
3.9/ 3.8a + 3.8b + 3.8c	Domestic R&D paid for by other companies and performed by the company	50,729
3.10/ 3.8k - 3.8d	Domestic R&D paid for by nonfederal sources and performed by the company	51,863
3.13	Performed at largest domestic location	35,451
3.15	Performed at second-largest domestic location	7,339
3.16	Domestic R&D paid for by U.S. federal government agencies or laboratories and performed by others	1,847
Projected R&D to be paid for by others and performed by the company in 2023		
3.17	Worldwide R&D to be paid for by others and performed by the company	112,152 i
3.18	Domestic R&D to be paid for by others and performed by the company	89,551
3.19	Domestic R&D to be paid for by the U.S. federal government and performed by the company	33,668
4.1d	Total value of assets owned or leased	14,106,170

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Question	Survey item	Aggregate amount
4.1a	Property, plant, and equipment	6,714,274
4.1b	Goodwill	4,494,155
4.1c	Identifiable intangible assets	2,897,741
4.2c	Accumulated depreciation and amortization on owned or leased assets	6,496,309
4.2a	Property, plant, and equipment	5,161,964
4.2b	Identifiable intangible assets	1,334,345
4.3d	Reduction in asset value due to impairment, changes, disposal, or retirement	359,245
4.3a	Property, plant, and equipment	165,981
4.3b	Goodwill	129,126
4.3c	Identifiable intangible assets	64,138
4.4d	Book value of assets acquired through mergers and acquisitions	583,517
4.4a	Property, plant, and equipment	71,503
4.4b	Goodwill	303,550
4.4c	Identifiable intangible assets	208,465
4.5c	Worldwide expenditures for capitalized assets	1,088,280
4.5a	Property, plant, and equipment	993,314
4.5b	Identifiable intangible assets	94,965
4.6c(1)	Domestic expenditures for capitalized assets	869,538
4.6a(1)	Property, plant, and equipment	789,492
4.6b(1)	Identifiable intangible assets	80,047
4.6c(2)	Foreign expenditures for capitalized assets	218,741
4.6a(2)	Property, plant, and equipment	203,823
4.6b(2)	Identifiable intangible assets	14,919
4.7c/ 4.8g	Domestic capital expenditures for R&D	36,069
4.7a	Property, plant, and equipment	31,655
4.7b	Identifiable intangible assets	4,414
4.8a	Land acquisition	155
4.8b	Buildings and land improvement	5,135
4.8c	Machinery and equipment	22,228
4.8d	Capitalized software	2,743
4.8e	Other intellectual property	3,726
4.8f	All other capital expenditures for R&D operations	2,082
5.1	Worldwide R&D paid for and performed by the company and others directed toward business areas or product lines new to the company	118,363
5.2/ 2.10(1)	Domestic R&D paid for and performed by the company	608,058
Type of R&D (character of work)		
5.4b	Basic research	35,918
5.4a	Applied research	80,834
5.3b	Development	491,307
Technology focus areas		
5.5	Software products and software embedded in other projects or products	276,644 i
5.6	Biotechnology	95,021
5.7	Nanotechnology	35,691 i
5.8	Artificial intelligence	33,416 i
5.10c/ 5.9	Foreign R&D paid for and performed by the company	135,009
5.10a	Research	21,019
5.10b	Development	113,991
5.11/ 3.5(1)	Domestic R&D paid for by others and performed by the company	83,489
Type of R&D (character of work)		
5.13b	Basic research	7,040

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5.13a	Applied research	19,821	i
5.12b	Development	56,629	
Technology focus areas			
5.14	Software products and software embedded in other projects or products	15,016	
5.15	Biotechnology	22,087	i
5.16	Nanotechnology	974	i
5.17	Artificial intelligence	3,598	i
5.18/ 3.8d	Federally funded R&D performed by the company	31,626	
Type of R&D (character of work)			
5.20b	Basic research	2,438	i
5.20a	Applied research	5,461	
5.19b	Development	23,727	
Technology focus areas			
5.21	Federally funded R&D performed by the company for software products and software embedded in other projects or products	5,141	
5.23c/ 5.22	Foreign R&D paid for by others and performed by the company	14,575	i
5.23a	Research	4,312	i
5.23b	Development	10,263	i
Employees (thousands)			
Worldwide			
1.8/ 1.9(3)/ 6.1c(3)	Total employees	36,453	
6.1b(3)	Non-R&D employees	33,267	
6.1a(3)	R&D employees	3,186	
6.4a(3)	Female	954	
6.4b(3)	Male	2,232	
6.5a(3)	Researchers	2,199	
6.5b(3)	Technicians	701	
6.5c(3)	Support staff	287	
Domestic			
1.9(1)/ 6.1c(1)	Total employees	24,092	
6.1b(1)	Non-R&D employees	21,982	
6.1a(1)	R&D employees	2,110	
6.4a(1)	Female	609	
6.4b(1)	Male	1,501	
6.5a(1)	Researchers	1,441	
6.5b(1)	Technicians	473	
6.5c(1)	Support staff	196	
Foreign			
1.9(2)/ 6.1c(2)	Total employees	12,361	
6.1b(2)	Non-R&D employees	11,285	
6.1a(2)	R&D employees	1,076	
6.4a(2)	Female	345	
6.4b(2)	Male	731	
6.5a(2)	Researchers	757	
6.5b(2)	Technicians	228	i
6.5c(2)	Support staff	91	
Researchers with PhD			
6.6(3)	Worldwide	184	
6.6(1)	Domestic	143	
6.6(2)	Foreign	42	i

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Question	Survey item	Aggregate amount	
	Full-time equivalent		
6.7d	R&D employees	1,941	
6.7a	Full-time R&D employees	1,639	
6.7b	Full-time employees not solely working on R&D	275	
6.7c	Part-time employees working on R&D	27	i
6.8d	Researchers	1,316	
6.8a	Full-time R&D employees	1,152	
6.8b	Full-time employees not solely working on R&D	153	i
6.8c	Part-time employees working on R&D	11	i
6.9	Non-U.S. citizens employed as researchers under temporary visa ^a	68	
6.10d(1)	Total leased and temporary employees working on R&D	303	i
6.10a(1)	Researchers	179	i
6.10b(1)	Technicians	84	i
6.10c(1)	Support staff	41	i
U.S. patents (number) ^a			
7.1	Patents applied for, total	160,810	
7.2	Nonprovisional utility patents applied for	110,955	
7.3	Nonprovisional utility patent applications filed or planned in foreign jurisdictions	57,853	
7.4	Nonprovisional utility patent applications originated from organized R&D activities	90,432	
7.6	Utility patents issued	103,232	
U.S. patents (US\$millions) ^a			
	Revenue received		
7.7	From sale of utility patents	773	
7.8	From licensing utility patents	24,625	
	Amount paid		
7.10	To purchase patents	1,860	
7.11	To license patents	13,048	

i = more than 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

^a Statistics are based on companies in the United States that reported to the survey. No systematic item imputation was applied. These statistics include an adjustment to the weight to account for unit nonresponse.**Note(s):**

Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D and are not comparable with estimates published for years prior to 2018.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2022.