

TABLE 1

Business Enterprise Research and Development Survey aggregate estimates, by questionnaire reference: 2019

(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	14,897,629
1.13	Net sales and operating revenues from domestic operations	11,180,864
	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	614,273
2.3	Worldwide R&D paid for by the company (expense), adjustments	43,255
2.4/2.7c	Worldwide R&D paid for by the company and performed by the company and others	571,019
2.7a	Domestic R&D paid for by the company and performed by the company and others	466,504
2.7b	Foreign R&D paid for by the company and performed by the company and others	104,515
2.5	Indirect R&D charges to be recouped from the U.S. federal government (IR&D, or independent R&D) ^a	6,190
2.8m(1)	Domestic R&D paid for by the company and performed by the company and others	466,504
2.8a(1)	Salaries, wages, and fringe benefits	231,648
2.8b(1)	Stock-based compensation	38,284
2.8c(1)	Leased or temporary staffing, including on-site contractors, working on R&D	19,261
2.8d(1)	Expensed equipment (not capitalized)	6,738
2.8e(1)	Materials and supplies	26,298
2.8f(1)	Leased facilities and equipment	7,405
2.8g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	17,058
2.8h(1)	Royalties and licensing fees	8,894
2.8i(1)	Collaborative R&D payments	5,717
2.8j(1)	Contract R&D	31,819
2.8k(1)	Other purchased services	12,400
2.8l(1)	All other costs	60,981
2.9(3)	Worldwide R&D paid for by the company and performed by others	48,107
2.9(1)	Domestic R&D paid for by the company and performed by others	37,537
2.9(2)	Foreign R&D paid for by the company and performed by others	10,570
2.10(3)	Worldwide R&D paid for and performed by the company	522,912
2.10(1)	Domestic R&D paid for and performed by the company	428,968
2.10(2)	Foreign R&D paid for and performed by the company	93,944
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	654,757
2.10(3) + 3.5(3)	Worldwide R&D paid for by the company and others and performed by the company	597,420
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	538,835
2.10(1) + 3.5(1)	Domestic R&D paid for by the company and others and performed by the company	492,956
	Domestic R&D paid for and performed by the company	
2.14	Performed at largest domestic location	258,722
2.16	Performed at second-largest domestic location	39,905
2.18	Domestic R&D paid for by foreign operations or subsidiaries and performed by the company ^a	27,117
2.19	Foreign R&D paid for by domestic operations or subsidiaries and performed by the company ^a	18,150
2.20i/2.9(1)	Domestic R&D paid for by the company and performed by others	37,537
2.20a	Companies in the United States	31,827
2.20b	Your company's foreign parent or owner	1,347
2.20c	Companies outside the United States	3,251
2.20d	U.S. federal government agencies or laboratories	64
2.20e	U.S. state and local government agencies or laboratories	24
2.20f	U.S. universities, colleges, and academic researchers	439
2.20g	All other organizations in the United States	465
2.20h	All other organizations outside the United States	120

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Question	Survey item	Aggregate amount
2.22	Monetary gifts made by the company to U.S. universities and colleges ^a	78
	Projected worldwide R&D expense paid for and performed by the company in 2020	
2.23(3)	Worldwide R&D to be paid for and performed by the company	606,520
2.23(1)	Domestic R&D to be paid for and performed by the company	499,435
2.23(2)	Foreign R&D to be paid for and performed by the company	107,085
2.24	Projected R&D services and projected payments for collaborative R&D	38,256
3.1j/3.2c	Worldwide R&D paid for by others and performed by the company and others	83,738
3.1a	R&D reimbursed by the company's foreign parent or owner	19,820
3.1b	Collaborative R&D reimbursed by business partners	8,975
3.1c	R&D paid for by grants (government or private foundation)	5,203
3.1d	Defense R&D goods or services provided as a prime contractor or subcontractor to the federal government and/or government contractors	16,563
3.1e	Medical clinical trial Phase I–III services provided to others not owned by the company	20,748 i
3.1f	Medical R&D services, other than clinical trials, provided to others not owned by the company	2,634
3.1g	Nondefense custom software development or computer systems designed for others not owned by the company	610
3.1h	Prototype development, production, and testing for customer's products	2,109
3.1i	All other R&D services provided to the federal government or to others not owned by the company	7,076 i
3.2c/3.1j	Worldwide R&D paid for by others and performed by the company and others	83,738
3.2a	Domestic R&D paid for by others and performed by the company and others	72,331
3.2b	Foreign R&D paid for by others and performed by the company and others	11,407 i
3.3m(1)	Domestic R&D paid for by others and performed by the company and others	72,331
3.3a(1)	Salaries, wages, and fringe benefits	36,350
3.3b(1)	Stock-based compensation	760
3.3c(1)	Leased or temporary staffing, including on-site contractors	2,090
3.3d(1)	Expensed equipment (not capitalized)	453
3.3e(1)	Materials and supplies	8,127 i
3.3f(1)	Leased facilities and equipment rental payments	831
3.3g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	1,803
3.3h(1)	Royalties and licensing fees	343
3.3i(1)	Collaborative R&D payments	2,698
3.3j(1)	Contract R&D	5,644
3.3k(1)	Other purchased services	4,479 i
3.3l(1)	All other costs	8,751
3.4(3)	Worldwide R&D paid for and performed by others	9,230
3.4(1)	Domestic R&D paid for and performed by others	8,342
3.4(2)	Foreign R&D paid for and performed by others	887
3.5(3)	Worldwide R&D paid for by others and performed by the company	74,508
3.5(2)	Foreign R&D paid for by others and performed by the company	10,519 i
3.5(1)	Domestic R&D paid for by others and performed by the company	63,989
3.8a	Other companies in the United States	21,461
3.8b	Your company's foreign parent or owner	17,563
3.8c	Other companies outside the United States	1,991
3.8d/3.11j/3.12c	U.S. federal government agencies or laboratories	21,941
3.8e	U.S. state and local government agencies or laboratories	100 - 192
3.8f	Foreign government agencies or laboratories	123
3.8g	U.S. universities, colleges, and academic researchers	47
3.8h	Universities, colleges, and academic researchers outside the United States	3 - 16
3.8i	All other organizations in the United States	627 - 719
3.8j	All other organizations outside the United States	32 - 44

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Question	Survey item	Aggregate amount
3.11j/3.8d/3.12c	Federally funded R&D performed by the company	21,941
3.11a	Department of Defense	15,141
3.11b	Department of Energy	519
3.11c	National Aeronautics and Space Administration	4,534
3.11d	National Institutes of Health	519
3.11e	Department of Homeland Security	124
3.11f	Department of Transportation	30
3.11g	Environmental Protection Agency	1
3.11h	National Science Foundation	8
3.11i	Other U.S. federal agencies	1,064
3.12c/3.8d/3.11j	Federally funded R&D performed by the company by type of agreement	21,941
3.12a	Contracts	20,844
3.12b	Grants and all other agreements	1,097
	Domestic R&D paid for by others and performed by the company	
3.16	Performed at largest domestic location	31,436
3.18	Performed at second-largest domestic location	5,354
3.19	Domestic R&D paid for by U.S. federal government agencies or laboratories and performed by others	2,133
	Projected R&D to be paid for by others and performed by the company in 2020	
3.20	Worldwide R&D to be paid for by others and performed by the company	85,666
3.21	Domestic R&D to be paid for by others and performed by the company	66,881
3.22	Domestic R&D to be paid for by the U.S. federal government and performed by the company	21,811
4.1	Total domestic capital expenditures	781,625
4.2/4.3f	Domestic capital expenditures for R&D	29,106
4.3a	Land acquisition	237
4.3b	Buildings and land improvement	3,739
4.3c	Equipment	15,663
4.3d	Capitalized software	5,475
4.3e	All other capital expenditures for R&D	3,992
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	67,132
5.2/2.10(1)	Domestic R&D paid for and performed by the company	428,968
	Type of R&D (character of work)	
5.4b	Basic research	25,916
5.4a	Applied research	59,697
5.3b	Development	343,355
	Application areas	
5.5	Energy applications	24,054
5.6	Environmental protection applications	10,405
5.7	Defense applications	13,290
5.8	Health or medical applications	108,075
5.9	Agricultural applications	8,078
	Technology focus areas	
5.10	Software products and software embedded in other projects or products	189,553
5.11	Biotechnology	62,952
5.12	Nanotechnology	21,626
5.13	Artificial intelligence	14,038
5.15c	Foreign R&D paid for and performed by the company	93,944
5.15a	Research	14,324
5.15b	Development	79,620
5.16/3.5(1)	Domestic R&D paid for by others and performed by the company	63,989

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	Type of R&D (character of work)		
5.18b	Basic research	6,324	
5.18a	Applied research	14,333	
5.17b	Development	43,332	
	Application areas		
5.19	Energy applications	2,108	i
5.20	Environmental protection applications	1,390	i
5.21	Defense applications	20,041	
5.22	Health or medical applications	25,691	i
5.23	Agricultural applications	627	
	Technology focus areas		
5.24	Software products and software embedded in other projects or products	11,306	
5.25	Biotechnology	14,841	
5.26	Nanotechnology	1,858	i
5.27	Artificial intelligence	1,313	i
	Federally funded R&D performed by the company		
	Type of R&D (character of work)		
5.30b	Basic research	2,313	i
5.30a	Applied research	4,883	
5.29b	Development	14,745	
	Technology focus areas		
5.31	Software products and software embedded in other projects or products	5,089	i
5.33c	Foreign R&D paid for by others and performed by the company	10,519	i
5.33a	Research	2,742	
5.33b	Development	7,778	i
Employees (thousands)			
	Worldwide		
1.8/1.9(3)	Total employees	32,296	
6.1b(3)	Non-R&D employees	29,620	
6.1a(3)	R&D employees	2,676	
6.4a(3)	Female	745	
6.4b(3)	Male	1,931	
6.5a(3)	Researchers	1,815	
6.5b(3)	Technicians	614	
6.5c(3)	Support staff	246	
	Domestic		
1.9(1)	Total employees	21,213	
6.1b(1)	Non-R&D employees	19,381	
6.1a(1)	R&D employees	1,832	
6.4a(1)	Female	488	
6.4b(1)	Male	1,344	
6.5a(1)	Researchers	1,232	
6.5b(1)	Technicians	426	
6.5c(1)	Support staff	174	
	Foreign		
1.9(2)	Total employees	11,083	
6.1b(2)	Non-R&D employees	10,239	
6.1a(2)	R&D employees	844	
6.4a(2)	Female	256	

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6.4b(2)	Male	587
6.5a(2)	Researchers	584
6.5b(2)	Technicians	188
6.5c(2)	Support staff	72
	Researchers with PhD	
6.6(3)	Worldwide	165
6.6(1)	Domestic	130
6.6(2)	Foreign	36
	Full-time equivalent	
6.7d	R&D employees	1,677
6.7a	Full-time R&D employees	1,384
6.7b	Full-time employees not solely working on R&D	277
6.7c	Part-time employees working on R&D	17
6.8d	Researchers	1,147
6.8a	Full-time R&D employees	989
6.8b	Full-time employees not solely working on R&D	150
6.8c	Part-time employees working on R&D	8
6.9	Non-U.S. citizens employed as researchers under temporary visa ^a	66
6.10d(1)	Total leased and temporary employees working on R&D	264 i
6.10a(1)	Researchers	171 i
6.5b(1)	Technicians	60 i
6.5c(1)	Support staff	32 i

i = > 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. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2019.