

TABLE 10. Worldwide R&D paid for by the company and performed by the company and others, by business activity: 2008–13

(Millions of U.S. dollars)

Business activity ^a	Business code ^b	2008	2009	2010	2011	2012	2013
All business activities	21100–81000	328,040	311,170	316,262	336,629	352,951	376,151
Oil and gas extraction	21100	1,215	1,223	1,268	1,379	D	1,487
Mining	21200	NA	D	75	128	92	114
Support activities for mining, including oil and gas	21300	NA	993	1,638	1,386	1,814	1,748
Utilities	22100	NA	1,607	903	639	686	608
Construction	23000	NA	198	918	269	393 i	307
Food manufacturing	31100	2,983	4,039	4,478	4,970	4,635	7,036
Beverage manufacturing	31210	605	564	926	668	641	772
Tobacco manufacturing	31220	D	792	800	717	662	668
Textile, apparel, and leather products manufacturing	31990	NA	673	658	712	759	787
Wood products manufacturing	32100	264	304	239	208	D	244
Paper manufacturing	32200	1,130	1,144	1,231	1,156	1,362	1,593
Printing and related support activities	32300	297	241	244	265	356 i	392
Petroleum refineries	32401	NA	NA	708	591	807	558
Asphalt paving, roofing, and saturated materials manufacturing	32402	NA	NA	35	39	45	123
Other petroleum and coal products manufacturing, including motor oil, hydraulic fluid, and charcoal	32403	NA	NA	403	415	382	455
Basic chemicals manufacturing	32510	3,806	2,978	3,133	3,614	4,271	4,167
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	32520	1,152	1,459	1,444	1,228	1,437	1,259
Pesticide, fertilizer, and other agricultural chemicals manufacturing	32530	2,100	1,990	1,722	2,333	2,307	2,365 i
Pharmaceutical, medicinal, botanical, and biological products (except diagnostic) manufacturing ^c	32541	70,016	68,588	71,603	67,688	69,473	68,136
In-vitro diagnostic substances manufacturing ^c	32542	1,988	1,159	1,207	1,544	1,371 i	1,070
Biotechnology-based pharmaceutical and biological products (except diagnostics)	32543	NA	NA	NA	NA	NA	10,958
Soap, cleaning compound, and toilet preparations manufacturing	32591	2,787	2,883	3,147	3,472	3,266	3,446
Paint, adhesive, and other chemical manufacturing	32592	2,152	2,320	2,238	2,011	2,087	1,929
Plastics and rubber products manufacturing	32600	2,536	2,842	3,128	3,689	3,739	3,592
Clay and glass products manufacturing	32710	966 i	312	1,056 i	920 i	1,154 i	1,078
Cement, concrete, lime, gypsum, and other nonmetallic mineral product manufacturing	32790	738	555	522	590	621	623 i
Primary metal manufacturing	33100	NA	840	933	783	882	740
Fabricated metal products manufacturing	33200	2,935	2,438	1,971	2,471	2,517	2,482
Agricultural machinery and equipment manufacturing	33311	1,404	1,507	1,523	1,430	1,893	2,055
Construction machinery manufacturing	33312	581	653	682	875	816	1,708
Mining, oil, and gas field machinery and equipment manufacturing	33319	NA	1,629	1,765	2,204	2,589	1,948 i
Semiconductor machinery manufacturing	33321	2,553	1,978	2,279	2,574	1,266 i	3,500
Industrial machinery manufacturing (except semiconductor machinery)	33322	1,191	853	806	1,128	1,031	1,011
Photographic and photocopying equipment manufacturing	33331	NA	852	270	757	25 i	108

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Commercial, service industry, temperature control, and air-flow control machinery manufacturing	33332	NA	977	1,268	1,143	1,621	1,676
Engine, turbine, and power transmission equipment manufacturing	33360	2,386	1,589	3,481	3,623	4,068	3,808
Metalworking and other general purpose machinery manufacturing	33390	2,039	1,618	1,998	2,359	1,916	2,261
Computers and peripheral equipment manufacturing and magnetic and optical media	33412	NA	13,094	12,672	13,319	14,716	12,871
Telephone apparatus manufacturing, including routers, modems, and gateways	33421	6,739	7,758	9,010	9,530	9,335	9,588
Radio, television, and wireless communication equipment manufacturing	33422	5,958	5,181	5,719	4,383	4,773	5,960
Other communication equipment manufacturing (except radio, television, and wireless communication equipment)	33429	2,482	1,352	715	1,092	2,111	1,826
Audio and video equipment manufacturing	33430	773	977	1,352	1,019	1,081	1,119
Semiconductor and other electronic components manufacturing	33440	29,911	26,118	29,457	32,354	38,109	39,998
Electromedical, electrotherapeutic, and irradiation apparatus manufacturing	33451	3,822	2,544	3,046	3,230	3,494	3,839
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing	33452	1,845	2,229	2,417	2,161	2,337	2,566
Measuring and control instruments manufacturing (not listed elsewhere)	33459	3,458	4,425	4,579	4,566	4,871	4,670
Electrical equipment, appliances, and components manufacturing	33500	4,687	4,229	4,500	4,768	4,773	5,268
Motor vehicles manufacturing	33610	18,296	13,165	14,524	17,011	18,362	17,743
Motor vehicle body and trailer manufacturing	33620	70	96	190	73	98 i	107 i
Motor vehicle parts manufacturing	33630	5,401	4,158	4,310	4,681	4,736	5,600
Aircraft manufacturing	33641	4,053	7,390	4,430	4,512	4,716 i	4,301
Aircraft engine and engine parts manufacturing	33642	2,433	1,765	1,978	2,136	D	1,506
Other aircraft parts and auxiliary equipment manufacturing	33643	1,222	1,135	1,825	1,752	3,121	3,263
Guided missiles, space vehicles, and related parts manufacturing	33644	1,402	1,176	1,132	1,050	659	499
Railroad rolling stock manufacturing	33651	195	83	177	165	237	214
Ship and boat building	33660	151	616 i	608 i	154	143 i	192
Motorcycle, bicycle, and parts manufacturing	33691	199	194	186	234	197	231
Military armored vehicle, tank, and tank components manufacturing	33692	107	228	182	118	135	90
All other transportation equipment manufacturing	33699	176	135	232	367	437	421
Furniture and related products manufacturing	33700	511	495	402	344	431	435
Medical equipment and supplies manufacturing	33910	11,587	11,457	13,226	13,701	14,259	15,155
Miscellaneous manufacturing not listed elsewhere (games, office supplies, slot machines, etc.)	33990	2,976	2,793	2,341	2,698	D	2,972
Merchant wholesalers, durable goods	42300	449	923 i	714	711	1,277 i	543
Merchant wholesalers, nondurable goods	42400	257	365 i	348	605	699 i	325

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Wholesale electronic markets and agents and brokers (business to business)	42500	14	43 i	19 i	70	173 i	18
Retail trade (except electronic shopping and electronic auctions)	44000	NA	50	164	74	100 i	128
Electronic shopping and electronic auctions	45411	NA	NA	753	D	1,749	1,285
Transportation	48000	NA	319	211	111	199	380
Couriers, messengers, and express delivery services	49200	D	14	6	D	D	90
Warehousing and storage	49300	26	17	19	16	17	11
Newspaper, periodical, book, and directory publishers (except Internet)	51110	180	748	853	408 i	257 i	339 i
Software publishers (except Internet) ^d	51120	31,369	26,362	28,457	29,992	31,209	39,002
Motion picture and sound recording (except Internet)	51200	104	135	93	67	67	53
Broadcasting (except Internet)	51500	NA	89	100	115	165 i	179
Wired telecommunications carriers	51710	673	D	1,499 i	1,685	1,631 i	1,131 i
Wireless telecommunications carriers (except satellite)	51720	532 i	186	724 i	815 i	860 i	1,614 i
Satellite telecommunications	51740	153	108	229	114	163	176
Other telecommunications (not listed elsewhere)	51790	501	351	338	462	399	377
Data processing, hosting, and related services ^d	51800	NA	2,889	3,051	5,293	4,406	4,381
Cloud computing applications and Internet-based software services	51801	NA	NA	NA	NA	NA	2,581
Other information services, including Internet publishing, broadcasting, and Web search portals ^d	51910	NA	5,519	7,270	9,456	12,998	15,430
Finance: banking and credit intermediation	52200	NA	D	1,235	1,703	2,454	3,240
Securities, commodity contracts, and other financial investments and related activities, including funds and trusts	52310	NA	678	903	1,347	1,110	1,329
Insurance carriers and related activities	52400	NA	798	611	872	1,429	1,772
Real estate	53100	20	32	3	13	27	64
Rental and leasing services	53200	NA	129	146	51	59	94
Lessors of nonfinancial intangible assets, including patent licensing	53300	80	259	268	369	437	100
Legal, accounting, tax preparation, bookkeeping, and payroll services	54111	NA	D	505	705 i	535	665
Architectural, engineering, and related services	54130	1,742	1,115	1,390	1,380	1,232	1,493
Specialized design services	54140	75	76	65	283	157 i	78
Computer systems design and related services ^d	54150	11,476	12,292	11,528	13,673	13,909 i	11,849
Management, scientific, and technical consulting services	54160	1,110	2,246	1,380	1,618	2,066 i	1,430
Research and development services in social sciences and humanities	54172	NA	96	8	19	64	36
Research and development services in biotechnology ^f	54173	NA	6,850	2,601	6,238	6,294	1,711
Research and development services in physical, engineering, and life sciences (except biotechnology)	54174	NA	3,208	1,447	2,751	3,166	2,412
Advertising and related services	54180	37	1,950	422	97	375 i	384
Professional, scientific, and technical services (not listed elsewhere)	54190	439	1,036	543	1,242	1,199	1,972

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Management of companies and enterprises	55100	11	40	23	43	18	65
Administrative and support services	56100	NA	419	640	348	609	633
Waste management and remediation services	56200	NA	15	684	20	D	23
Offices of physicians	62110	40	37	371	36	42 i	43
Medical and diagnostic laboratories	62150	903	246	409	287	364	345
Other ambulatory health care services (ambulance, dental, home health care)	62199	NA	47	145 i	15	45 i	52
Hospitals and nursing care facilities	62200	NA	62 i	68	2	2 i	2
Social assistance services	62400	NA	D	15	13	36	47
Arts, entertainment, and recreation	71000	NA	161	137	85	70	30
Accommodation and food services	72000	NA	50	119	84	149 i	163
Other services (not listed elsewhere)	81000	NA	89	465	345	484	406
Undistributed	–	10,660	14,175	5,373 i	D	491	425 i

D = data withheld to avoid disclosing operations of individual companies; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse; NA = not available.

NAICS = 2007 North American Industry Classification System. For survey year 2008, industry classification was based on the 2002 NAICS.

^a Data tabulated independent of the industry classification of the company. Companies were asked to report their sales and R&D activity in one or more business activity codes.

^b Business codes and descriptions based on 2007 NAICS industry definitions.

^c Estimates for this business code may not be comparable to those from prior years due to the introduction of a related business code for survey year 2013: 32543, Biotechnology-based pharmaceutical and biological products (except diagnostics).

^d Estimates for this business code may not be comparable to those from prior years due to the introduction of a related business code for survey year 2013: 51801, Cloud computing applications and Internet-based software services.

NOTES: Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded R&D. For companies that did not report business codes, classification used for sampling was assigned.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and U.S. Census Bureau, Business R&D and Innovation Survey.