

Codebook

Vietnam Firm-level Adoption of Technology (FAT) Survey

Variable Name	Variable Label	Variable Type	Answer Code	Answer Label
firm_id	Firm ID	double		Open ended
firmid	Firm ID	long		Open ended
country	Country	String		Open ended
survey_year	Survey Year	String		Open ended
base_wt	Sampling Weight	Numeric		Open ended
s1a	Sampling sector	String		Open ended
s1b	Sampling size	String		Open ended
s1c	Sampling location	String		Open ended
s2e	State/Province	String		Open ended
s2f	Country	String		Open ended
s3a	Formal Registration	Numeric		
			-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
s4	Multi-Establishment	Numeric		
			-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
s7	Screening employment size	Integer		Open ended
ref_year1	Reference Year 1	String		Open ended
ref_year2	Reference Year 2	String		Open ended
a3a	Private domestic ownership %	Numeric		
			-9	Don't Know
			-7	Not Applicable
a3b	Private foreign ownership %	Numeric		
			-9	Don't Know
			-7	Not Applicable
a4b	Founder - Ownership	Numeric		
			-9	Don't know
			-7	Not applicable
			1	Founder
			2	Founder's family
			3	No
a4c	Founder - Top Manager	Numeric		
			-9	Don't know
			-7	Not applicable

			1 Founder 2 Founder's family 3 No
a4d	Largest Owner - Top Manager	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
a4e	Female Owner	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
a4f	Female Ownership %	Numeric	-9 Don't Know -7 Not Applicable
a5a	Sector - group	Integer	1 Agriculture 2 Livestock 3 Food Processing 4 Wearing apparel 5 Motor vehicles 6 Pharmaceuticals 7 Wholesale or retail 8 Financial services 9 Land transport 10 Health services 11 Leather goods 12 Accommodation 13 Bricks 14 Cement 15 Iron and Steel 101 Other manufacturing 102 Other services
a6	Year of beginning operations	Integer	-9 Don't Know -7 Not Applicable
a7a	Top Manager - Experience Same Sector	Numeric	-9 Don't Know -7 Not Applicable
a7b	Top Manager - Female	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

a7c	Top Manager - Highest Education	Numeric	<p>2 No</p> <p>-9 Don't know</p> <p>1 Primary school</p> <p>2 Secondary school</p> <p>3 Complete high-school</p> <p>4 College degree</p> <p>5 Post-Graduation (MBA, Master or PhD)</p> <p>6 Vocational training</p>
a7d	Top Manager - Studied Abroad	Numeric	<p>-9 Don't Know</p> <p>-7 Not Applicable</p> <p>1 Yes</p> <p>2 No</p>
b10a	Supply Mgt. - MOST used method	Numeric	<p>1 Suppliers - manual search</p> <p>2 Suppliers - management of supply chain info</p> <p>3 Suppliers - online social media</p> <p>4 Suppliers - SRM (not integrated w prod planning)</p> <p>5 Suppliers - SRM (integrated w prod planning)</p> <p>6 Suppliers - other</p>
b10a1	Suppliers - manual search	Numeric	<p>-9 Don't Know</p> <p>-7 Not Applicable</p> <p>1 Yes</p> <p>2 No</p>
b10a2	Suppliers - management of supply chain info	Numeric	<p>-9 Don't Know</p> <p>-7 Not Applicable</p> <p>1 Yes</p> <p>2 No</p>
b10a3	Suppliers - online social media	Numeric	<p>2 No</p>

b10a4	Suppliers - SRM (not integrated w prod planning)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b10a5	Suppliers - SRM (integrated w prod planning)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b10a6	Suppliers - other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b10b	Searching employees - Procedure	Numeric	-9 Don't Know 1 Direct reference 2 Job search announcements (newspapers and magazines) 3 Job search online networks 4 Job search announcements (own website) 5 Recruitment agencies 6 Other
b10c	Years using b10a4, b10a5	Numeric	-9 Don't Know -7 Not Applicable
b11a1	Marketing - Face to Face Chat	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b11a2	Marketing - Online Chat	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a3	Marketing - Structured Surveys	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a4	Marketing - CRM	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a5	Marketing - Big Data Analytics	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a6	Marketing - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11b	Marketing - MOST used method	Numeric	1 Marketing - Face to Face Chat 2 Marketing - Online Chat 3 Marketing - Structured Surveys 4 Marketing - CRM 5 Marketing - Big Data Analytics 6 Marketing - Other
b11c	Years using b11a4, b11a5	Numeric	-9 Don't Know -7 Not Applicable
b12a1	Fabrication - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b12a2	Fabrication - Machines w/o computer	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a3	Fabrication - Computer	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a4	Fabrication - Robots	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a5	Fabrication - Additive manufacturing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a6	Fabrication - Other Adv. Processes	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a7	Fabrication - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12b	Fabrication - MOST used method	Numeric	1 Fabrication - Manual 2 Fabrication - Machines w/o computer 3 Fabrication - Computer 4 Fabrication - Robots 5 Fabrication - Additive manufacturing 6 Fabrication - Other Adv. Processes 7 Fabrication - Other
b12c	Years using b12a3, b12a4, b12a5, b12a6	Numeric	

b13a	Direct sale	Numeric	-9 Don't Know -7 Not Applicable
b13b1	Sales - Establishment Premises	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b2	Sales - Phone, email or sales representatives	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b3	Sales - Social media platforms/apps	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b4	Sales - Online Sales (ext. dig. platforms)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b5	Sales - Online Sales (own website)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b6	Sales - Electronic orders	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13b7	Sales - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b13c	Sales - MOST used method	Numeric	1 Sales - Establishment Premises 2 Sales - Phone, email or sales representatives 3 Sales - Social media platforms/apps 4 Sales - Online Sales (ext. dig. platforms) 5 Sales - Online Sales (own website) 6 Sales - Electronic orders 7 Sales - Other
b13d	Years using b12b4, b13b5, b13b6	Numeric	-9 Don't Know -7 Not Applicable
b13e1	Sales share (%) - online (ext. dig.)	Numeric	-9 Don't Know -7 Not Applicable
b13e2	Sales share (%) - online (own website)	Numeric	-9 Don't Know -7 Not Applicable
b13e3	Sales share (%) - electronic orders	Numeric	-9 Don't Know -7 Not Applicable
b14a1	Payment - goods exchange	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a2	Payment - cash	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a3	Payment - Cheque, voucher, bank wire	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b14a4	Payment - Cards	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a5	Payment - Online/electronic	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a6	Payment - Online (platforms)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a7	Payment - Cryptocurrency	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a8	Payment - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14b	Payment - MOST used method	Numeric	1 Payment - goods exchange 2 Payment - cash 3 Payment - Cheque, voucher, bank wire 4 Payment - Cards 5 Payment - Online/electronic 6 Payment - Online (platforms) 7 Payment - Cryptocurrency 8 Payment - Other
b14c	Years using b14a5, b14a6	Numeric	-9 Don't Know -7 Not Applicable

b15a1	Quality Control - Manual, Visual or Written	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a2	Quality Control - Human Inspection	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a3	Quality Control - Statistical Control	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a4	Quality Control - Automated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a5	Quality Control - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15b	Quality Control - MOST used method	Numeric	1 Quality Control - Manual, Visual or Written 2 Quality Control - Human Inspection 3 Quality Control - Statistical Control 4 Quality Control - Automated 5 Quality Control - Other
b15c	Years using b15a4, b15a5	Numeric	-9 Don't Know -7 Not Applicable
b15c1	Qual. mgt. - Business certification	Numeric	-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
b15c2	Qual. mgt. - Six sigma	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b15c3	Qual. mgt. - TQM	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b15c4	Qual. mgt. - Lean, Just-in-Time, or Kaizen	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b1a	Electrical Connection	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b1b	Power Outages - Year	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b1c	Power Outages - Monthly	Numeric	
			-9 Don't Know
			-7 Not Applicable
b1d	Length of power outages-hours	Numeric	
			-9 Don't Know
			-7 Not Applicable
b1e	Length of power outages-minutes	Numeric	
			-9 Don't Know
			-7 Not Applicable
b2a	Own/Share Generator	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

b2b	Generator - share of electricity %	Numeric	-9 Don't Know -7 Not Applicable
b2c	Main source of energy	Numeric	-9 Don't know 1 Solar power 2 Fuel 3 Grid or Battery-stored backup 4 Wind power 5 Other 6 Gas
b3a	No. of telephone lines	Integer	-9 Don't Know -7 Not Applicable
b3b	No. of mobile lines	Integer	-9 Don't Know -7 Not Applicable
b4a	No. of Desktop or Laptops	Integer	-9 Don't Know -7 Not Applicable
b4b	No. of Tablets or Smartphones	Integer	-9 Don't Know -7 Not Applicable
b5a	Internet connection	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b5b	Fastest Internet Connection	Numeric	-9 Don't know 1 Dial up 2 DSL or Fiber 3 Wireless or Satellite 4 BPL 5 Other
b5c	No. of internet service downs	Numeric	-100 Too many to count -9 Don't Know 1 Less than one
b5d	Length of the Internet service down-hours	Numeric	

b5e	Length of the Internet service down-minutes	Numeric	-9 Don't Know -7 Not Applicable
b5f	Own Website	Numeric	-9 Don't Know -7 Not Applicable
b5g	Online Social Media	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b5h	Cloud Computer Services	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b6a	Water Connection	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b7a	Production compared to other firms in country	Numeric	-9 Don't Know -7 Not Applicable
b7b	Production compared to other firms in world	Numeric	-9 Don't Know -7 Not Applicable
b8a1	Business Administration - Handwritten Processes	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a2	Business Administration - Computers (standard softwares)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b8a3	Business Administration - Mobile Apps or Digital Platform	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a4	Business Administration - Computers (specialised softwares)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a5	Business Administration - ERP	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a6	Business Administration - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8b	Business Administration - MOST used method	Numeric	1 Business Administration - Handwritten Processes 2 Business Administration - Computers (standard softwares) 3 Business Administration - Mobile Apps or Digital Platform 4 Business Administration - Computers (specialised softwares) 5 Business Administration - ERP 6 Business Administration - Other
b8c	Years using b8a4, b8a5	Numeric	

b9a1	Production Planning - Handwritten processes	Numeric	-9 Don't Know -7 Not Applicable
b9a2	Production Planning - Computers (standard softwares)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a3	Production Planning - Mobile Apps or digital platforms	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a4	Production Planning - Specialized software	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a5	Production Planning - ERP	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a6	Production Planning - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9b	Production Planning - MOST used method	Numeric	1 Production Planning - Handwritten processes 2 Production Planning - Computers (standard softwares)

			3 Production Planning - Mobile Apps or digital platforms
			4 Production Planning - Specialized software
			5 Production Planning - ERP
			6 Production Planning - Other
b9c	Years using b9a4, b9a5	Numeric	-9 Don't Know
			-7 Not Applicable
c1_0a1	Crops: Info. sources - Radio	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a2	Crops: Info. sources - TV	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a3	Crops: Info. sources - Non-internet mobile	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a4	Crops: Info. sources - Mobile internet tech	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a5	Crops: Info. sources - Meet other producers	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a6	Crops: Info. sources - Pub. or Pvt. agent visit	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c1_0a7	Crops: Info. sources - Precision agriculture	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_0b1	Crops: Info. sources - MOST relevant source	Numeric	1 Crops: Info. sources - Radio 2 Crops: Info. sources - TV 3 Crops: Info. sources - Non-internet mobile 4 Crops: Info. sources - Mobile internet tech 5 Crops: Info. sources - Meet other producers 6 Crops: Info. sources - Pub. or Pvt. agent visit 7 Crops: Info. sources - Precision agriculture 8 Crops: Info. sources - Others
c1_0c1	Crops: N acres OWNED	long	-9 Don't Know -7 Not Applicable
c1_0c2	Crops: N acres RENTED or LEASED FROM OTHERS	long	-9 Don't Know -7 Not Applicable
c1_0c3	Crops: N acres RENTED or LEASED TO OTHERS	Integer	-9 Don't Know -7 Not Applicable
c1_0c4	Crops: N acres available - Total	long	-9 Don't Know -7 Not Applicable
c1_0c5	N tractors owned	Numeric	-9 Don't Know -7 Not Applicable
c1_0c6	Rent tractor, equipment, or machines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_0c7	Use digital or online platform for c1_0c6	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_0d1	Main source of seeds used	Numeric	-9 Don't know 1 Own production 2 Private providers 3 Public programs 4 Other
c1_0d2	Pre-treatment to seeds	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_1a1	Land prep - own workers	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_1a2	Land prep - outsourced (another unit - same enterprise)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_1a3	Land prep - outsourced (other workers or enterprise)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_1b1	Land prep - Manual plowing (simple tools)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_1b2	Land prep - Animal Aided	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c1_1b3	Land prep - Manually operated machines	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1b4	Land prep - Digitally operated tractors or equipment	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1b5	Land prep - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1c	Land prep - MOST used method	Numeric	
			-9 Don't Know
			1 Land prep - Manual plowing (simple tools)
			2 Land prep - Animal Aided
			3 Land prep - Manually operated machines
			4 Land prep - Digitally operated tractors or equipment
			5 Land prep - Other
c1_1d	Years using c1_1b4	Numeric	
			-9 Don't Know
			-7 Not Applicable
c1_2a1	Product requires irrigation	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_2b1	Irrig.- Rain-fed, no additional irrig.	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c1_2b2	Irrig. - Manual irrig.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b3	Irrig. - Surface Flood Irrig.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b4	Irrig. - Small Pump	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b5	Irrig. - Drip, localized, underground, Sprinkler, centre pivot	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b6	Irrig. - Automated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b7	Irrig.- Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2c	Irrig. - MOST used method	Numeric	1 Irrig.- Rain-fed, no additional irrig. 2 Irrig. - Manual irrig. 3 Irrig. - Surface Flood Irrig. 4 Irrig. - Small Pump 5 Irrig. - Drip, localized, underground, Sprinkler, centre pivot 6 Irrig. - Automated 7 Irrig.- Other
c1_2d	Years using c1_2b5, c1_2b6	Numeric	

			-9 Don't Know -7 Not Applicable
c1_3a1	Weeding/pest control - in house	Numeric	-9 Don't Know -7 Not Applicable
c1_3a2	Weeding/pest control - outsourced (another unit - same enterprise)	Numeric	1 Yes 2 No
c1_3a3	Weeding/pest control - outsourced (another enterprise)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b1	Weeding/pest control - Manual application	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b2	Weeding/pest control - Mechanical application	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b3	Weeding/pest control - Biological methods	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b4	Weeding/pest control - Precision agriculture	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_3b5	Weeding/pest control - Advanced precision agriculture	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b6	Weeding/pest control - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3c	Weeding/pest control - MOST used method	Numeric	1 Weeding/pest control - Manual application 2 Weeding/pest control - Mechanical application 3 Weeding/pest control - Biological methods 4 Weeding/pest control - Precision agriculture 5 Weeding/pest control - Advanced precision agriculture 6 Weeding/pest control - Other
c1_3d	Years using c1_3b6, c1_3b7	Numeric	-9 Don't Know -7 Not Applicable
c1_3e	Use organic or chemicals for weeding/pest control	Numeric	-9 Don't know 1 Organic 2 Chemical 3 Both
c1_4a1	Harvesting, training or pruning - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_4a2	Harvesting, training or pruning - outsourced (another unit - same enterprise)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4a3	Harvesting, training or pruning - outsourced (another enterprise)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b1	Harvesting, training, or pruning - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b2	Harvesting, training, or pruning - Animal Aided	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b3	Harvesting, training, or pruning - Human-operated machines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b4	Harvesting, training, or pruning - Manually mechanised	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b5	Harvesting, training, or pruning - Digitally automated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c1_4b6	Harvesting, training, or pruning - Other	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_4c	Harvesting, training, or pruning - MOST used method	Numeric	
			-9 Don't know
			1 Harvesting, training, or pruning - Manual
			2 Harvesting, training, or pruning - Animal Aided
			3 Harvesting, training, or pruning - Human-operated machines
			4 Harvesting, training, or pruning - Manually mechanised
			5 Harvesting, training, or pruning - Digitally automated
			6 Harvesting, training, or pruning - Other
c1_4d	Years using c1_4b4, c1_4b5	Numeric	
			-9 Don't Know
			-7 Not Applicable
c1_5a1	Storage - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5a2	Storage - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5a3	Storage - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes

c1_5b1	Storage facility - Precarious	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b2	Storage facility - Protected (w/o temp. control)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b3	Storage facility - Special Storage (temp. control)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b4	Storage facility - High-end central storage	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b5	Storage facility - Cont. temp. monitoring	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b6	Storage facility - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5c	Storage facility - MOST used	Numeric	
			-9 Don't know
			1 Storage facility - Precarious
			2 Storage facility - Protected (w/o temp. control)
			3 Storage facility - Special Storage (temp. control)

			4 Storage facility - High-end central storage
			5 Storage facility - Cont. temp. monitoring
			6 Storage facility - Other
c1_5d	Years using c1_5b3, c1_5b4, c1_5b5	Numeric	
			-9 Don't Know
			-7 Not Applicable
c1_6a1	Packing - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6a2	Packing - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6a3	Packing - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6b1	Packing - Manual	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6b2	Packing - Human-operated mech. equip.	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6b3	Packing - Automated	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_6b4	Packing - Modified atmosphere	Numeric	
			-9 Don't Know
			-7 Not Applicable

c1_6b5	Packing - Other	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c1_6c	Packing - MOST used method	Numeric	1 Yes 2 No 1 Packing - Manual 2 Packing - Human-operated mech. equip. 3 Packing - Automated 4 Packing - Modified atmosphere 5 Packing - Other
c1_6d	Years using c1_6b, c1_6b4	Numeric	-9 Don't Know -7 Not Applicable
c2_0a1	Livestock: Info sources - Radio	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_0a2	Livestock: Info sources - TV	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_0a3	Livestock: Info sources - Non-internet mobile	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_0a4	Livestock: Info sources - Mobile internet tech	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_0a5	Livestock: Info sources - Meet other producers	Numeric	-9 Don't Know -7 Not Applicable

c2_0a6	Livestock: Info sources - Pub or pvt agen visits	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c2_0a7	Livestock: Info sources - Precision agri tools	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c2_0b	Livestock: Info sources - MOST relevant source	Numeric	1 Yes 2 No -9 Don't Know 1 Livestock: Info sources - Radio 2 Livestock: Info sources - TV 3 Livestock: Info sources - Non-internet mobile 4 Livestock: Info sources - Mobile internet tech 5 Livestock: Info sources - Meet other producers 6 Livestock: Info sources - Pub or pvt agen visits 7 Livestock: Info sources - Precision agri tools 8 Livestock: Info sources - Others
c2_0c1	Livestocks: No. of acres OWNED	double	-9 Don't Know -7 Not Applicable
c2_0c2	Livestocks: No. of acres RENTED or LEASED FROM OTHERS	double	-9 Don't Know -7 Not Applicable
c2_0c3	Livestocks: No. of acres RENTED or LEASED TO OTHERS	Numeric	-9 Don't Know -7 Not Applicable

c2_0c4	Livestocks: No. of acres OPERATES Total	double	-9 Don't Know -7 Not Applicable
c2_1a1	Breeding/genetic - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1a2	Breeding/genetic - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1a3	Breeding/genetic - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b1	Breeding/genetic - Breed substitution	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b2	Breeding/genetic - Inbreeding or Crossbreeding	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b3	Breeding/genetic - Artificial insemination (AI)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b4	Breeding/genetic - Selective breeding	Numeric	-9 Don't Know

c2_1b5	Breeding/genetic - Other	Numeric	-7 Not Applicable 1 Yes 2 No
c2_1c	Breeding/genetic - MOST used method	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No -9 Don't Know 1 Breeding/genetic - Breed substitution 2 Breeding/genetic - Inbreeding or Crossbreeding 3 Breeding/genetic - Artificial insemination (AI) 4 Breeding/genetic - Selective breeding 5 Breeding/genetic - Other
c2_1d	Years using c2_1b3, c2_1b4	Numeric	-9 Don't Know -7 Not Applicable
c2_2a1	Animal nutrition/feeding - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2a2	Animal nutrition/feeding- outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2a3	Animal nutrition/feeding - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c2_2b1	Animal nutrition - Household waste or fibrous crop residues	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b2	Animal nutrition - Natural grasslands and pastures	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b3	Animal nutrition - Integrated crop-livestock systems	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b4	Animal nutrition - Production of forage crops	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b5	Animal nutrition - Production of supplementary feed	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b6	Animal nutrition - Manu. or mixing of feed	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b7	Animal nutrition - Prod. of genetically-modified feed	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c2_2b8	Animal nutrition - Other	Numeric	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2c	Animal nutrition - MOST used method	Numeric	-9 Don't Know 1 Animal nutrition - Household waste or fibrous crop residues 2 Animal nutrition - Natural grasslands and pastures 3 Animal nutrition - Integrated crop-livestock systems 4 Animal nutrition - Production of forage crops 5 Animal nutrition - Production of supplementary feed 6 Animal nutrition - Manu. or mixing of feed 7 Animal nutrition - Prod. of genetically-modified feed 8 Animal nutrition - Other -9 Don't Know -7 Not Applicable
c2_2d	Years using c2_2b5, c2_2b6, c2_2b7	Numeric	
c2_3a1	Animal healthcare - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3a2	Animal healthcare - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c2_3a3	Animal healthcare - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b1	Animal healthcare - Rapid diagnostic tests	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b2	Animal healthcare - Pest sprays	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b3	Animal healthcare - Vaccines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b4	Animal healthcare - DNA or RNA vaccine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b5	Animal healthcare - Disease med.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3b6	Animal healthcare - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3c	Animal healthcare - MOST used method	Numeric	-9 Don't Know

			<ul style="list-style-type: none"> 1 Animal healthcare - Rapid diagnostic tests 2 Animal healthcare - Pest sprays 3 Animal healthcare - Vaccines 4 Animal healthcare - DNA or RNA vaccine 5 Animal healthcare - Disease med. 6 Animal healthcare - Other
c2_3d	Years using c2_3b3, c2_3b4	Numeric	
			-9 Don't Know -7 Not Applicable
c2_4a1	Herd mgt/monitoring - in house	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4a2	Herd mgt/monitoring - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4a3	Herd mgt/monitoring - outsourced (another firm)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b1	Herd mgt/monitoring - Human	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b2	Herd mgt/monitoring - Animal-aided	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes

c2_4b3	Herd mgt/monitoring - Feedlots or grazing	Numeric	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b4	Herd mgt/monitoring - Automated cameras/video	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b5	Herd mgt/monitoring - Unmanned aerial	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b6	Herd mgt/monitoring - Analog tracking	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b7	Herd mgt/monitoring - Digital tracking	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4b8	Herd mgt/monitoring - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_4c	Herd mgt/monitoring - MOST used method	Numeric	-9 Don't Know 1 Herd mgt/monitoring - Human 2 Herd mgt/monitoring - Animal-aided 3 Herd mgt/monitoring - Feedlots or grazing

			4 Herd mgt/monitoring - Automated cameras/video
			5 Herd mgt/monitoring - Unmanned aerial
			6 Herd mgt/monitoring - Analog tracking
			7 Herd mgt/monitoring - Digital tracking
			8 Herd mgt/monitoring - Other
c2_4d	Years using c2_4b5, c2_4b6, c2_4b7	Numeric	
			-9 Don't Know
c2_5a1	Transp. livestock - in house	Numeric	-7 Not Applicable
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5a2	Transp. livestock - outsourced (another unit - same enterprise)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5a3	Transp. livestock - outsourced (another enterprise)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5b1	Transp. livestock - Manual	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5b2	Transp. livestock - Non-motorized vehicles	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c2_5b3	Transp. livestock - Motorized vehicles	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_5b4	Transp. livestock - Specialized/climate-controlled vehicles	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_5b5	Transp. livestock - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_5c	Transp. - MOST used method	Numeric	-9 Don't Know 1 Transp. livestock - Manual 2 Transp. livestock - Non-motorized vehicles 3 Transp. livestock - Motorized vehicles 4 Transp. livestock - Specialized/climate-controlled vehicles 5 Transp. livestock - Other
c2_5d	Years using c2_5b4	Numeric	-9 Don't Know -7 Not Applicable
c3_0a1	Regulated/inspected by govt. agency	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_0a2	Main agency regulating	String	Open ended
c3_0b1	Finished - shelf stable	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c3_0b2	Finished - fresh/perishable	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1a1	Input testing - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1a2	Input testing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1a3	Input testing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b1	Input testing - Sensory	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b2	Input testing - Review of supplier testing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b3	Input testing - Non- computer-controlled	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b4	Input testing - Computer testing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c3_1b5	Input testing - Other	Numeric	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1c	Input testing - MOST used method	Numeric	-9 Don't Know 1 Input testing - Sensory 2 Input testing - Review of supplier testing 3 Input testing - Non-computer-controlled 4 Input testing - Computer testing 5 Input testing - Other
c3_1d	Years using c3_1b4	Numeric	-9 Don't Know -7 Not Applicable
c3_2a1	Food prep. - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2a2	Food prep. - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2a3	Food prep. - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b1	Food prep. - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b2	Food prep. - Mech. equipment (human force)	Numeric	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c3_2b3	Food prep. - Power equipment (human interaction)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b4	Food prep. - Power equipment (computers or robotics, minimal int.)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b5	Food prep. - Other	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2c	Food prep. - MOST used method	Numeric	
			-9 Don't Know 1 Food prep. - Manual 2 Food prep. - Mech. equipment (human force) 3 Food prep. - Power equipment (human interaction) 4 Food prep. - Power equipment (computers or robotics, minimal int.) 5 Food prep. - Other
c3_2d	Years using c3_2b3, c3_2b4	Numeric	
			-9 Don't Know -7 Not Applicable
c3_3a1	Anti-bacterial - in house	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No

c3_3a2	Anti-bacterial - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3a3	Anti-bacterial - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b1	Anti-bacterial - Minimal-processing preservation	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b2	Anti-bacterial - Anti-bacterial wash or soaking	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b3	Anti-bacterial - Thermal Processing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b4	Anti-bacterial - Other adv. methods	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b5	Anti-bacterial - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3c	Anti-bacterial - MOST used method	Numeric	-9 Don't Know

			1 Anti-bacterial - Minimal-processing preservation
			2 Anti-bacterial - Anti-bacterial wash or soaking
			3 Anti-bacterial - Thermal Processing
			4 Anti-bacterial - Other adv. methods
			5 Anti-bacterial - Other
c3_3d	Years using c3_3b3, c3_3b4	Numeric	
			-9 Don't Know
			-7 Not Applicable
c3_4a1	Food pkg. - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4a2	Food pkg. - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4a3	Food pkg. - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b1	Food pkg. - Manual	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b2	Food pkg. - Human-operated mech. equip.	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b3	Food pkg. - Power equip. (human interaction)	Numeric	
			-9 Don't Know
			-7 Not Applicable

c3_4b4	Food pkg. - Power equip. (comp./robotics, min. human int.)	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_4b5	Food pkg. - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_4c	Food pkg. - MOST used method	Numeric	-9 Don't Know 1 Food pkg. - Manual 2 Food pkg. - Human- operated mech. equip. 3 Food pkg. - Power equip. (human interaction) 4 Food pkg. - Power equip. (comp./robotics, min. human int.) 5 Food pkg. - Other
c3_4d	Years using c3_4b3, c_3b4	Numeric	-9 Don't Know -7 Not Applicable
c3_5a1	Store food - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5a2	Store food - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5a3	Store food - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c3_5b1	Food storage - Minimal protection (some exposure)	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_5b2	Food storage - Ambient conditions (closed building)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_5b3	Food storage - Some climate control (secured building)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_5b4	Food storage - Automated climate (security-controlled building)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_5b5	Food storage - Other	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_5c	Food storage - MOST used method	Numeric	-9 Don't Know
			1 Food storage - Minimal protection (some exposure)
			2 Food storage - Ambient conditions (closed building)
			3 Food storage - Some climate control (secured building)

			4 Food storage - Automated climate (security-controlled building)
			5 Food storage - Other
c3_5d	Years using c3_5b3, c3_5b4	Numeric	-9 Don't Know -7 Not Applicable
c4_0a1	Prod. material - Printed fabric	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a2	Prod. material - White fabric	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a3	Prod. material - Fabric threads	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a4	Prod. material - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b1	Garments prod.- Basic	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b2	Garments prod. - Fashion	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b3	Garments prod. - Sports	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c4_0b4	Garments prod. - Protective apparel	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b5	Garments prod. - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c1	Finishes - Silk screen	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c2	Finishes - Embroidery	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c3	Finishes - Washing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c4	Finishes - Waterproofing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c5	Finishes - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_1a1	Provide files for design	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_1a2	Most common file provid.	Numeric	-9 Don't know 1 Graded file of all sizes ready to cut 2 A prototype cutting file for grading

			3 Hand drawing of the design
			4 Computer drawing of the design
			5 3D file of the design
			6 Other
c4_1a3	Design drawing - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1a4	Design drawing - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1a5	Design drawing - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b1	Design drawing - Manual/hand-draw	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b2	Design drawing - Digital/semi-digital design	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b3	Design drawing - CAD	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b4	Design drawing - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable

c4_1c	Design drawing - MOST used method	Numeric	1 Yes 2 No
c4_1d	Years using c4_1b2, c4_1b3	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2a1	Cutting - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2a2	Cutting - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2a3	Cutting - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b1	Cutting - Manual cutting	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b2	Cutting - Cutting machine (manually operated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b3	Cutting - Semi-Automatic cutting machine	Numeric	-9 Don't Know

c4_2b4	Cutting - Automatic/Computerized cutting machine (no Laser)	Numeric	-7 Not Applicable 1 Yes 2 No
c4_2b5	Cutting - Automatic/Computerized cutting machine (Laser)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b6	Cutting - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2c	Cutting - MOST used method	Numeric	-9 Don't know 1 Cutting - Manual cutting 2 Cutting - Cutting machine (manually operated) 3 Cutting - Semi-Automatic cutting machine 4 Cutting - Automatic/Computerized cutting machine (no Laser) 5 Cutting - Automatic/Computerized cutting machine (Laser) 6 Cutting - Other
c4_2d	Years using c4_2b4, c4_2b5	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c4_3a1	Sewing - in house	Numeric	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3a2	Sewing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3a3	Sewing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3b1	Sewing - Manually	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3b2	Sewing - Machine (manually operated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3b3	Sewing - Semi-automated machines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3b4	Sewing - Automated machines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3b5	Sewing - 3D Knitting	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c4_3b6	Sewing - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3c	Sewing - MOST used method	Numeric	-9 Don't know 1 Sewing - Manually 2 Sewing - Machine (manually operated) 3 Sewing - Semi-automated machines 4 Sewing - Automated machines 5 Sewing - 3D Knitting 6 Sewing - Other
c4_3d	Years using c4_3b3, c4_3b4, c4_3b5	Integer	-9 Don't Know -7 Not Applicable
c4_4a1	Finishing/ironing- in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4a2	Finishing/ironing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4a3	Finishing/ironing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b1	Finishing/ironing - Basic manual ironing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c4_4b2	Finishing/ironing - Electric high-pressure steam iron	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b3	Finishing/ironing - Tunnel finisher	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b4	Finishing/ironing - Form finishing machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b5	Finishing/ironing - High tech pressing machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b6	Finishing/ironing - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4c	Finishing/ironing - MOST used method	Numeric	-9 Don't know 1 Finishing/ironing - Basic manual ironing 2 Finishing/ironing - Electric high-pressure steam iron 3 Finishing/ironing - Tunnel finisher 4 Finishing/ironing - Form finishing machine 5 Finishing/ironing - High tech pressing machine 6 Finishing/ironing - Other

c4_4d	Years using c4_4b3, c4_4b4, c4_4b5	Numeric	-9 Don't Know -7 Not Applicable
c5_1a1	Assemble vehicles - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1a2	Assemble vehicles - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1a3	Assemble vehicles - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b1	Assembly/fabrication - Machines (controlled by operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b2	Assembly/fabrication - FMC or FMS	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b3	Assembly/fabrication - Lasers (materials processing)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b4	Assembly/fabrication - CNC machinery	Numeric	-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
c5_1b5	Assembly/fabrication - Robots	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_1b6	Assembly/fabrication - Additive manufacturing	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_1b7	Assembly/fabrication - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_1c	Assembly/fabrication- MOST used method	Numeric	
			-9 Don't know
			1 Assembly/fabrication - Machines (controlled by operators)
			2 Assembly/fabrication - FMC or FMS
			3 Assembly/fabrication - Lasers (materials processing)
			4 Assembly/fabrication - CNC machinery
			5 Assembly/fabrication - Robots
			6 Assembly/fabrication - Additive manufacturing
			7 Assembly/fabrication - Other
c5_1d	Years using c5_1b4, c5_1b5, c5_1b6	Numeric	
			-9 Don't Know
			-7 Not Applicable
c5_2a1	Body press/welding - in house	Numeric	
			-9 Don't Know

c5_2a2	Body press/welding - outsourced (another unit - same firm)	Numeric	-7 Not Applicable 1 Yes 2 No
c5_2a3	Body press/welding - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b1	Body press/welding - Pressing of skin panels (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b2	Body press/welding - Pressing of structural components (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b3	Body press/welding - Welding of main body (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b4	Body press/welding - Pressing of skin panels (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c5_2b5	Body press/welding - Pressing of structural components (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b6	Body press/welding - Welding of main body (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b7	Body press/welding - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2c	Pressing/welding method - MOST used method	Numeric	-9 Don't know 1 Body press/welding - Pressing of skin panels (operators) 2 Body press/welding - Pressing of structural components (operators) 3 Body press/welding - Welding of main body (operators) 4 Body press/welding - Pressing of skin panels (automated) 5 Body press/welding - Pressing of structural components (automated) 6 Body press/welding - Welding of main body (automated) 7 Body press/welding - Other

c5_2d	Years using c5_2b4, c5_2b5, c5_2b6	Numeric	-9 Don't Know -7 Not Applicable
c5_3a1	Painting - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3a2	Painting - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3a3	Painting - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b1	Painting - Water-based painting (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b2	Painting - Solvent-based painting (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b3	Painting - Water-based painting (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b4	Painting - Solvent-based painting (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b5	Painting - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3c	Painting - MOST used method	Numeric	-9 Don't know 1 Painting - Water-based painting (operators) 2 Painting - Solvent-based painting (operators) 3 Painting - Water-based painting (automated) 4 Painting - Solvent-based painting (automated) 5 Painting - Other
c5_3d	Years using c5_3b3, c5_3b4	Numeric	
c5_4a1	Plastic injection molding - in house	Numeric	-9 Don't Know -7 Not Applicable
c5_4a2	Plastic injection molding - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4a3	Plastic injection molding - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b1	Plastic injection- Non-visible interior plastic (operators)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
			-9 Don't Know -7 Not Applicable

c5_4b2	Plastic injection - Plastic exterior body parts (operators)	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b3	Plastic injection- Non-visible interior plastic (robotics)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b4	Plastic injection - Plastic exterior body parts (robotics)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b5	Plastic injection - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4c	Plastic injection - MOST used method	Numeric	-9 Don't know 1 Plastic injection- Non-visible interior plastic (operators) 2 Plastic injection - Plastic exterior body parts (operators) 3 Plastic injection- Non-visible interior plastic (robotics) 4 Plastic injection - Plastic exterior body parts (robotics) 5 Plastic injection - Other
c5_4d	Years using c5_4b3, c5_4b4	Integer	-9 Don't Know

c5_5a1	Productive assets mgt. - in house	Numeric	-7 Not Applicable
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5a2	Productive assets mgt. - outsourced (another unit - same firm)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5a3	Productive assets mgt. - outsourced (another firm)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5b1	Productive asset mgt. - Breakdown maintenance	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5b2	Productive asset mgt. - Preventative/predictive maintenance	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5b3	Productive asset mgt. - Model Based Condition Monitoring	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c5_5b4	Productive asset mgt. - Other	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c5_5c	Productive asset mgt. - MOST used method	Numeric	-9 Don't know 1 Productive asset mgt. - Breakdown maintenance 2 Productive asset mgt. - Preventative/predictive maintenance 3 Productive asset mgt. - Model Based Condition Monitoring 4 Productive asset mgt. - Other
c5_5d	Years using c5_5b2, c5_5b3	Numeric	-9 Don't Know -7 Not Applicable
c6_0a1	Produce tablets and capsules	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a2	Produce creams and ointments	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a3	Produce eye and ear solutions	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a4	Produce syrups and dry powders	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0b1	Main product produced	Numeric	1 Tablets and capsules 2 Creams and ointments 3 Eye and ear solutions 4 Syrups and dry powders

c6_0c1	Research with new-drug discovery	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0c2	Lead researchers - direct employees	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a1	Mix raw mat./compounding - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a2	Mix raw mat./ compounding - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a3	Mix raw mat./compounding - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b1	Air filtration - Unfiltered air	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b2	Air filtration - Basic	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b3	Air filtration - HEPA	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b4	Air filtration - Ultra HEPA, pressurization control	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b5	Air filtration - Other	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1c	Air filtration - MOST used method	Numeric	
			-9 Don't know 1 Air filtration - Unfiltered air 2 Air filtration - Basic 3 Air filtration - HEPA 4 Air filtration - Ultra HEPA, pressurization control 5 Air filtration - Other
c6_1d	Years using c6_1b3, c6_1b4	Numeric	
			-9 Don't Know -7 Not Applicable
c6_2b1	Weighting - Beam Scales	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_2b2	Weighting - Analog Scales	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_2b3	Weighting - Electronic Scales	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes

c6_2b4	Weighting - Automated Weighing	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_2b5	Weighting - Other	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_2c	Weighting - MOST used method	Numeric	-9 Don't know
			1 Weighting - Beam Scales
			2 Weighting - Analog Scales
			3 Weighting - Electronic Scales
			4 Weighting - Automated Weighing
			5 Weighting - Other
c6_2d	Years using c6_2b4	Numeric	-9 Don't Know
			-7 Not Applicable
c6_3b1	Mixing/compounding - Manual	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_3b2	Mixing/compounding - Planetary Mixers OR homogenizers	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_3b3	Mixing/compounding - High Speed, High Shear Granulators	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c6_3b4	Mixing/compounding - Fluid Bed Processors (not with syrups)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3b5	Mixing/compounding - Fully Automated Compounding	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3b6	Mixing/compounding - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3c	Mixing/compounding - MOST used method	Numeric	-9 Don't know 1 Mixing/compounding - Manual 2 Mixing/compounding - Planetary Mixers OR homogenizers 3 Mixing/compounding - High Speed, High Shear Granulators 4 Mixing/compounding - Fluid Bed Processors (not with syrups) 5 Mixing/compounding - Fully Automated Compounding 6 Mixing/compounding - Other
c6_3d	Years using c6_3b3, c6_3b4, c6_3b5	Numeric	-9 Don't Know -7 Not Applicable
c6_4a1	Compression/encapsulation - in house	Numeric	-9 Don't Know -7 Not Applicable

c6_4a2	Compression/encapsulation - outsourced (another unit - same firm)	Numeric	1 Yes 2 No
c6_4a3	Compression/encapsulation - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_4b1	Compression/encapsulation - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_4b2	Compression/encapsulation - Motorized	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_4b3	Compression/encapsulation - Automated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_4b4	Compression/encapsulation - Integrated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_4b5	Compression/encapsulation - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c6_4c	Compression/encapsulation - MOST used method	Numeric	-9 Don't know 1 Compression/encapsulation - Manual 2 Compression/encapsulation - Motorized 3 Compression/encapsulation - Automated 4 Compression/encapsulation - Integrated 5 Compression/encapsulation - Other
c6_4d	Years using c6_4b3, c6_4b4	Numeric	-9 Don't Know -7 Not Applicable
c6_5a1	Quality control - in-house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5a2	Quality control - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5a3	Quality control - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5b1	Quality control - Manual, titrimetric/chromatographic	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5b2	Quality control - Elec. chromatography	Numeric	-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
c6_5b3	Quality control - Elec. chromatography w data acquisition	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_5b4	Quality control - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_5c	Quality Control - MOST used method	Numeric	
			-9 Don't know
			1 Quality control - Manual, titrimetric/chromatographic
			2 Quality control - Elec. chromatography
			3 Quality control - Elec. chromatography w data acquisition
			4 Quality control - Other
c6_5d	Years using c6_5b2, c6_5b3	Numeric	
			-9 Don't Know
			-7 Not Applicable
c6_6a1	Package pharma. products - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_6a2	Package pharma. products - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c6_6a3	Package pharma. products - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6b1	Packaging - Manual filling pills or syrups	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6b2	Packaging - Slat Counters, Cottoners, etc; machine filling	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6b3	Packaging - Automated, integrated packaging lines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6b4	Packaging - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6c	Packaging - MOST used method	Numeric	-9 Don't know 1 Packaging - Manual filling pills or syrups 2 Packaging - Slat Counters, Cottoners, etc; machine filling 3 Packaging - Automated, integrated packaging lines 4 Packaging - Other
c6_6d	Years using c6_6b2, c6_6b3	Numeric	-9 Don't Know

c7_1a1	Cust. supp. - in house	Numeric	-7 Not Applicable
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1a2	Cust. supp. - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1a3	Cust. supp. - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b1	Cust. serv. - Store	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b2	Cust. serv. - Phone or Help Desk	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b3	Cust. serv. - Social Media	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b4	Cust. serv. - Online requests	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b5	Cust. serv. - Chatbots	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_1b6	Cust. serv. - Other	Numeric	

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_1c	Service procedure - MOST used method	Numeric	-9 Don't know 1 Cust. serv. - Store 2 Cust. serv. - Phone or Help Desk 3 Cust. serv. - Social Media 4 Cust. serv. - Online requests 5 Cust. serv. - Chatbots 6 Cust. serv. - Other
c7_1d	Years using c7_1b3, c7_1b4, c7_1b5	Numeric	
c7_2a1	Pricing - in house	Numeric	-9 Don't Know -7 Not Applicable
c7_2a2	Pricing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2a3	Pricing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2b1	Pricing - Manual Cost	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2b2	Pricing - Automated markup	Numeric	-9 Don't Know -7 Not Applicable

c7_2b3	Pricing - Automated promotional	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c7_2b4	Pricing - Dynamic pricing systems	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c7_2b5	Pricing - Personalized pricing (predictive analytics)	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c7_2b6	Pricing - Other	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable
c7_2c	Pricing - MOST used method	Numeric	1 Yes 2 No -9 Don't know 1 Pricing - Manual Cost 2 Pricing - Automated markup 3 Pricing - Automated promotional 4 Pricing - Dynamic pricing systems 5 Pricing - Personalized pricing (predictive analytics) 6 Pricing - Other
c7_2d	Years using c7_2b4, c7_2b5	Numeric	-9 Don't Know -7 Not Applicable
c7_2da	Regulation - price mechanism	Numeric	-9 Don't Know

c7_2db	Agency regulating price	String	-7 Not Applicable
c7_3a1	Merchandising - in house	Numeric	1 Yes 2 No Open ended
c7_3a2	Merchandising - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3a3	Merchandising - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3b1	Merchandising - Manually selection	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3b2	Merchandising - Category mgt.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3b3	Merchandising - Retail Merch. Systems or Digital Merch.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3b4	Merchandising - Product trend analytics	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c7_3b5	Merchandising - Other	Numeric	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_3c	Merchandising - MOST used method	Numeric	-9 Don't know 1 Merchandising - Manually selection 2 Merchandising - Category mgt. 3 Merchandising - Retail Merch. Systems or Digital Merch. 4 Merchandising - Product trend analytics 5 Merchandising - Other
c7_3d	Years using c7_3b3, c7_3b4	Numeric	-9 Don't Know -7 Not Applicable
c7_4a1	Mgt. inventory - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_4a2	Mgt. inventory - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_4a3	Mgt. inventory - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_4b1	Inventory - Handwritten record keeping	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c7_4b2	Inventory - Computer databases (manual updates)	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_4b3	Inventory - WMS (specialised software)	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_4b4	Inventory - CAO, vendor-managed, and/or radio-frequency identification	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_4b5	Inventory - AS/RS	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_4b6	Inventory - Other	Numeric	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c7_4c	Inventory - MOST used method	Numeric	-9 Don't know
			1 Inventory - Handwritten record keeping
			2 Inventory - Computer databases (manual updates)
			3 Inventory - WMS (specialised software)
			4 Inventory - CAO, vendor-managed, and/or radio-frequency identification
			5 Inventory - AS/RS
			6 Inventory - Other

c7_4d	Years using c7_4b4, c7_4b5	Numeric	-9 Don't Know -7 Not Applicable
c7_5a1	Ads - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5a2	Ads - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5a3	Ads - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b1	Ad channels - Paper based communication	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b2	Ad channels - Radio, Billboards, TV	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b3	Ad channels - Email or mobile phone	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b4	Ad channels - Social Media	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c7_5b5	Ad channels - Search Engine Marketing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b6	Ad channels - Big data Analytics or AI	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b7	Ad channels - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5c	Ad channels - MOST used method	Numeric	-9 Don't know 1 Ad channels - Paper based communication 2 Ad channels - Radio, Billboards, TV 3 Ad channels - Email or mobile phone 4 Ad channels - Social Media 5 Ad channels - Search Engine Marketing 6 Ad channels - Big data Analytics or AI 7 Ad channels - Other
c7_5d	Years using c7_5b5, c7_5b6	Numeric	-9 Don't Know -7 Not Applicable
c8_0a	N checking accounts managed	Numeric	-9 Don't Know -7 Not Applicable
c8_0b	N saving acc. managed	Integer	-9 Don't Know -7 Not Applicable
c8_0c	N loans managed	Integer	-9 Don't Know -7 Not Applicable

c8_1a1	Cust. serv. (checking + savings acc) - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1a2	Cust. serv. (checking + savings acc) - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1a3	Cust. serv. (checking + savings acc) - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1b1	Cust. serv. - Teller	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1b2	Cust. serv. - ATM machines	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1b3	Cust. serv. - On-line on company website	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1b4	Cust. serv. - Mobile app	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_1b6	Cust. serv. - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c8_1c	Cust. serv. - MOST used method	Numeric	2 No -9 Don't know 1 Cust. serv. - Teller 2 Cust. serv. - ATM machines 3 Cust. serv. - On-line on company website 4 Cust. serv. - Mobile app 6 Cust. serv. - Other
c8_1d	Years using c8_1b3, c8_1b4	Numeric	-9 Don't Know -7 Not Applicable
c8_2a1	Client id/fraud - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2a2	Client id/fraud - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2a3	Client id/fraud - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b1	Verification id - Teller	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b2	Verification id - online passwords	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b3	Verification id - online passwords (combined)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b4	Verification id - Digital auth.	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b5	Verification id - Biometrics	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b6	Verification id - Blockchain	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2b7	Verification id - Other	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_2c	Verification - MOST used method	Numeric	
			-9 Don't know 1 Verification id - Teller 2 Verification id - online passwords 3 Verification id - online passwords (combined) 4 Verification id - Digital auth. 5 Verification id - Biometrics 6 Verification id - Blockchain 7 Verification id - Other
c8_2d	Years using c8_2b4, c8_2b5, c8_2b6	Numeric	
			-9 Don't Know -7 Not Applicable
c8_3a1	Loan app - in house	Numeric	

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3a2	Loan app - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3a3	Loan app - outsourced (another firm)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3b1	Loan app - Loan officer (paper-based)	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3b2	Loan app - Mobile app + paper	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3b3	Loan app - Channel partners	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3b4	Loan app - Mobile app + digital process	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_3b5	Loan app - Other	Numeric	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No

c8_3c	Loan app - MOST used method	Numeric	-9 Don't know 1 Loan app - Loan officer (paper-based) 2 Loan app - Mobile app + paper 3 Loan app - Channel partners 4 Loan app - Mobile app + digital process 5 Loan app - Other
c8_3d	Years using c8_3b2, c8_3b4	Numeric	-9 Don't Know -7 Not Applicable
c8_4a1	Credit approvals - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4a2	Credit approvals - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4a3	Credit approvals - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b1	Credit approvals - Analyst (paper-based)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b2	Credit approvals - Analyst (digital info)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

c8_4b3	Credit approvals - Automated	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c8_4b4	Credit approvals - Algorithm (AI or Big-Data)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c8_4b5	Credit approvals - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c8_4c	Credit approvals - MOST used method	Numeric	
			-9 Don't know
			1 Credit approvals - Analyst (paper-based)
			2 Credit approvals - Analyst (digital info)
			3 Credit approvals - Automated
			4 Credit approvals - Algorithm (AI or Big-Data)
			5 Credit approvals - Other
c8_4d	Years using c8_4b3, c8_4b4	Numeric	
			-9 Don't Know
			-7 Not Applicable
c8_5a1	Operational supp. - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c8_5a2	Operational supp. - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable

c8_5a3	Operational supp. - outsourced (another firm)	Numeric	1 Yes 2 No
c8_5b1	Op. supp. - writing records	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_5b2	Op. supp. - dig. accounting (PCs)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_5b3	Op. supp. - dig. network	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_5b4	Op. supp. - other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_5c	Op. supp. - MOST used method	Numeric	-9 Don't know 1 Op. supp. - writing records 2 Op. supp. - dig. accounting (PCs) 3 Op. supp. - dig. network 4 Op. supp. - other
c8_5d	Years using c8_5b2, c8_5b3	Numeric	-9 Don't Know -7 Not Applicable
c9_0a1	Transport serv. - Passengers	Numeric	-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
c9_0a2	Transport serv. - Freight	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0a3	Transport serv. - Other	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b1	Fleet type - Trucks	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b10	N of vehicles with GPS tracking	Numeric	
			-9 Don't Know
			-7 Not Applicable
c9_0b2	Fleet type - Cars	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b3	Fleet type - Motorcycle	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b4	Fleet type - Others	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b5	N of vehicles - Trucks	Numeric	
			-9 Don't Know
			-7 Not Applicable
c9_0b6	N of vehicles - Cars	Numeric	
			-9 Don't Know
			-7 Not Applicable
c9_0b7	N of vehicles - Motorcycle	Numeric	
			-9 Don't Know
			-7 Not Applicable

c9_0b8	N of vehicles with automatic transmission	Numeric	-9 Don't Know -7 Not Applicable
c9_0b9	N of vehicles with hybrid or electric	Numeric	-9 Don't Know -7 Not Applicable
c9_0c1	Regulations - hours uninterrupted driving	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_0c2	Regulations - type of vehicles allowed	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1a1	Load optimization - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1a2	Load optimization - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1a3	Load optimization - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b1	Transportation planning - handwritten info.	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c9_1b2	Transportation planning - electronic file share	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b3	Transportation planning - installed software	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b4	Transportation planning - real time info. with ERP	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b5	Transportation planning - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1c	Transportation planning - MOST used method	Numeric	-9 Don't know 1 Information collected by non-specialized workers to create load plans 2 Information collected by electronic file share (e.g. Email or FAX to create load plans) 3 Batch information collected by software installed ERP to create ERP generated load plans 4 Real time information by online software interface with ERP to create load plans 5 Other
c9_1d	Years using c9_1b3, c9_1b4	Numeric	

c9_2a1	Execute transp. load plans - in house	Numeric	-9 Don't Know -7 Not Applicable
c9_2a2	Execute transp. load plans - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2a3	Execute transp. load plans - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b1	Loading - Manual process (fax, text, phone)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b2	Loading - Manual process (dig. platforms)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b3	Loading - web-based	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b4	Loading - specific software interface via Internet	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c9_2b5	Loading - file exchange (ERP integrated apps)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b6	Loading - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2c	Loading - MOST used method	Numeric	-9 Don't know 1 Loading - Manual process (fax, text, phone) 2 Loading - Manual process (dig. platforms) 3 Loading - web-based 4 Loading - specific software interface via Internet 5 Loading - file exchange (ERP integrated apps) 6 Loading - Other
c9_2d	Years using c9_2b3, c9_2b4, c9_2b5	Numeric	-9 Don't Know -7 Not Applicable
c9_3a1	Monitor load/delivery - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3a2	Monitor load/delivery - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3a3	Monitor load/delivery - outsourced (another firm)	Numeric	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c9_3b1	Monitoring load/delivery - Event driven (fax, text, phone calls)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b2	Monitoring load/delivery - Event driven (digital)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b3	Monitoring load/delivery - Paper documentation	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b4	Monitoring load/delivery - installed softwares	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b5	Monitoring load/delivery - ERP integrated apps	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b6	Monitoring load/delivery - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3c	Transportation monitoring - MOST used method	Numeric	-9 Don't know

			1 Monitoring load/delivery - Event driven (fax, text, phone calls)
			2 Monitoring load/delivery - Event driven (digital)
			3 Monitoring load/delivery - Paper documentation
			4 Monitoring load/delivery - installed softwares
			5 Monitoring load/delivery - ERP integrated apps
			6 Monitoring load/delivery - Other
c9_3d	Years using c9_3b3, c9_3b4, c9_3b5	Numeric	
			-9 Don't Know
			-7 Not Applicable
c9_4a1	Transport performance - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_4a2	Transport performance - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_4a3	Transport performance - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_4b1	Transp. perf. - manually	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c9_4b2	Transp. perf. - computer (non-specialized software)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4b3	Transp. perf. - computer (specialised transp. reporting)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4b4	Transp. perf. - installed software	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4b5	Transp. perf. - file exchange between ERP integrated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4b6	Transp. perf. - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4c	Transp. Perf. - MOST used method	Numeric	-9 Don't know 1 Transp. perf. - manually 2 Transp. perf. - computer (non-specialized software) 3 Transp. perf. - computer (specialised transp. reporting) 4 Transp. perf. - installed software 5 Transp. perf. - file exchange between ERP integrated

c9_4d	Years using c9_4b3, c9_4b4, c9_4b5	Numeric	6 Transp. perf. - Other
			-9 Don't Know
			-7 Not Applicable
c9_5a1	Fleet assets - in house	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5a2	Fleet assets - outsourced (another unit - same firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5a3	Fleet assets - outsourced (another firm)	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5b1	Fleet management - manual	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5b2	Fleet management - electronic file	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5b3	Fleet management - ETM	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_5b4	Fleet management - ERP and software	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c9_5b5	Fleet management - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5c	Fleet management - MOST used method	Numeric	-9 Don't know 1 Fleet management - manual 2 Fleet management - electronic file 3 Fleet management - ETM 4 Fleet management - ERP and software 5 Fleet management - Other
c9_5d	Years using c9_5b3, c9_5b4	Numeric	-9 Don't Know -7 Not Applicable
c10_0	Complexity of health treatment	Numeric	-9 Don't know -7 Not applicable 1 Level 1: Primary Care 2 Level 2: Specialty Physician Care 3 Level 3: Acute Care General Hospital or Ambulatory Surgical Center 4 Level 4: Specialty Acute Care Hospital 5 Other
c10_0a	No. of patients per day	Integer	-9 Don't Know -7 Not Applicable
c10_0b	No. of patients night, per day	Integer	-9 Don't Know -7 Not Applicable
c10_0c	No. of full-time doctors	Numeric	-9 Don't Know -7 Not Applicable

c10_0d	No. of full-time nurses	Integer	-9 Don't Know -7 Not Applicable
c10_1a1	Hosp. facilities - ER	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a10	Hosp. facilities - ultrasound machine	Numeric	-9 Don't know 1 Yes 2 No
c10_1a11	Hosp. facilities - Pulse oximetry	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a12	Hosp. facilities - ECG	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a2	Hosp. facilities - Postoperative care area	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a3	Hosp. facilities - ICU	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a4	Hosp. facilities - Blood Bank	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a5	Hosp. facilities - Testing labs	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c10_1a6	Hosp. facilities - X-ray	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a7	Hosp. facilities - ultrasound machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a8	Hosp. facilities - CT scan	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a9	Hosp. facilities - MRI machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1b1	Hosp. facilities - ER no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b10	Hospital facilities - Functioning ultrasound machine	Numeric	-9 Don't know -7 Not applicable
c10_1b11	Hosp. facilities - Pulse oximetry no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b12	Hosp. facilities - ECG no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b2	Hosp. facilities - Postoperative care area no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b3	Hosp. facilities - ICU no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b4	Hosp. facilities - Blood Bank no.	Numeric	-9 Don't Know -7 Not Applicable

c10_1b5	Hosp. facilities - Testing labs no.	Integer	-9 Don't Know -7 Not Applicable
c10_1b6	Hosp. facilities - X-ray no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b7	Hosp. facilities - ultrasound machine no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b8	Hosp. facilities - CT scan no.	Numeric	-9 Don't Know -7 Not Applicable
c10_1b9	Hosp. facilities - MRI machine no.	Numeric	-9 Don't Know -7 Not Applicable
c10_2a1	Appt. - in house	Numeric	-9 Don't Know -7 Not Applicable
c10_2a2	Appt. - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2a3	Appt. - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b1	Scheduling - Personal visit and paper	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c10_2b2	Scheduling - Phone call, SMS, or Email	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b3	Scheduling - Software or app (w/o automated reminders)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b4	Scheduling - Software or app (w automated reminders)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b5	Scheduling - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2c	Scheduling - MOST used method	Numeric	-9 Don't know 1 Scheduling - Personal visit and paper 2 Scheduling - Phone call, SMS, or Email 3 Scheduling - Software or app (w/o automated reminders) 4 Scheduling - Software or app (w automated reminders) 5 Scheduling - Other
c10_2d	Years using c10_2b3, c10_2b4	Numeric	-9 Don't Know -7 Not Applicable
c10_3a1	Patient records - in house	Numeric	-9 Don't Know -7 Not Applicable

			1 Yes 2 No
c10_3a2	Patient records - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3a3	Patient records - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b1	Patient records - Handwritten process	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b2	Patient records - Digital patient records	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b3	Patient records - EHR	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b4	Patient records - Cloud- based HER	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b5	Patient records - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3c	Patient record - MOST used method	Numeric	-9 Don't know

			<ul style="list-style-type: none"> 1 Patient records - Handwritten process 2 Patient records - Digital patient records 3 Patient records - EHR 4 Patient records - Cloud-based HER 5 Patient records - Other
c10_3d	Years using c10_3b3, c10_3b4	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable
c10_4a1	Pharmacy - in house	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4b1	Medication - Internal Pharmacy	Numeric	<ul style="list-style-type: none"> -9 Don't know 1 Med. mgt./admin. - Handwritten 2 Med. mgt./admin. - Barcode/electronic id 3 Med. mgt./admin. - Other
c10_4b2	Medication - Order of medication	Numeric	<ul style="list-style-type: none"> -9 Don't know -7 Not applicable 1 Manual order 2 Electronic order
c10_4c1	Med. mgt./admin. - Handwritten	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4c2	Med. mgt./admin. - Barcode/electronic id	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4c3	Med. mgt./admin. - Other	Numeric	<ul style="list-style-type: none"> -9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
c10_4d	Years using c10_4c2	Numeric	
			-9 Don't Know
			-7 Not Applicable
c10_5a1	Sepsis treat. - antibiotics	Numeric	
			-9 Don't know
			-7 Not applicable
			1 It is always available
			2 It is NOT always available
			3 It is NEVER available
c10_5a2	Sepsis treat. - adv. therapies	Numeric	
			-9 Don't know
			-7 Not applicable
			1 It is always available
			2 It is NOT always available
			3 It is NEVER available
c10_5b1	Childbirth - C-section	Numeric	
			-9 Don't know
			-7 Not applicable
			1 It is always available
			2 It is NOT always available
			3 It is NEVER available
c10_5b2	Childbirth - High-risk labor	Numeric	
			-9 Don't know
			-7 Not applicable
			1 It is always available
			2 It is NOT always available
			3 It is NEVER available
c10_5c1	Trauma - Traction (closed fracture)	Numeric	
			-9 Don't know
			-7 Not applicable
			1 It is always available
			2 It is NOT always available
			3 It is NEVER available
c10_5c2	Trauma - Open Treatment of Fracture	Numeric	
			3 It is NEVER available
			-9 Don't know

			-7 Not applicable 1 It is always available 2 It is NOT always available 3 It is NEVER available
c10_5d1	Myocardial infarction/Strokes - defibrillation	Numeric	-9 Don't know -7 Not applicable 1 It is always available 2 It is NOT always available 3 It is NEVER available
c10_5d2	Myocardial infarction/Strokes - angiography	Numeric	-9 Don't know -7 Not applicable 1 It is always available 2 It is NOT always available 3 It is NEVER available
c11_01a	Material - natural leather	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_01b	Material - man-made leather	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_01c	Material - textile	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_01d	Material - synthetic + textile	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_01e	Material - synthetic + textile + leather	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_01f	Material - other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_02a	Leather goods - basic	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_02b	Leather goods - fashion	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_02c	Leather goods - sports	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_02d	Leather goods - shoes	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_02e	Leather goods - other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_03a	Finishes - screen print	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_03b	Finishes - embroidery	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_03c	Finishes - seamless	Numeric	-9 Don't Know -7 Not Applicable

c11_03d	Finishes - ink or wax	Numeric	1 Yes 2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_03e	Finishes - waterproofing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_03f	Finishes - other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1a1	Provide files for design	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1a2	Most common files	Numeric	-9 Don't know 1 Graded file of all sizes ready to cut 2 A prototype cutting file for grading 3 Hand drawing of the design 4 Computer drawing of the design 5 3D file of the design 6 Other
c11_1a3	Design drawing - in house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1a4	Design drawing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c11_1a5	Design drawing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1b1	Design - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1b2	Design - Digital or semi-digital	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1b3	Design - CAD, 3D, or virtual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1b4	Design - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_1c	Design - MOST used method	Numeric	-9 Don't know 1 Design - Manual 2 Design - Digital or semi-digital 3 Design - CAD, 3D, or virtual 4 Design - Other
c11_1d	Years using c11_1b2, c11_1b3	Numeric	-9 Don't Know -7 Not Applicable
c11_2a1	Cutting - in-house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c11_2a2	Cutting - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2a3	Cutting - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b1	Cutting - Manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b2	Cutting - Machine manually- operated	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b3	Cutting - Semi-automatic machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b4	Cutting - Automatic/Computerised (no Laser)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b5	Cutting - Automatic/Computerised (Laser)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_2b6	Cutting - Other	Numeric	-9 Don't Know -7 Not Applicable

c11_2c	Cutting - MOST used method	Numeric	1 Yes 2 No -9 Don't know 1 Cutting - Manual 2 Cutting - Machine manually-operated 3 Cutting - Semi-automatic machine 4 Cutting - Automatic/Computerised (no Laser) 5 Cutting - Automatic/Computerised (Laser) 6 Cutting - Other
c11_2d	Years using c11_2b4, c11_2b5	Numeric	-9 Don't Know
c11_3a1	Sewing - in-house	Numeric	-7 Not Applicable
c11_3a2	Sewing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3a3	Sewing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3b1	Sewing - Manually	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3b2	Sewing - Machine (manually)	Numeric	2 No -9 Don't Know

c11_3b3	Sewing - Machine (semi-automated)	Numeric	-7 Not Applicable 1 Yes 2 No
c11_3b4	Sewing - Machine (automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3b5	Sewing - 3D Knitting	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3b6	Sewing - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_3c	Sewing - MOST used method	Numeric	-9 Don't know 1 Sewing - Manually 2 Sewing - Machine (manually) 3 Sewing - Machine (semi-automated) 4 Sewing - Machine (automated) 5 Sewing - 3D Knitting 6 Sewing - Other
c11_3d	Years using c11_3b3, c11_3b4, c11_cb5	Numeric	-9 Don't Know -7 Not Applicable
c11_4a1	Assembly/Finishing - in-house	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c11_4a2	Assembly/Finishing - outsourced (another unit - same firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4a3	Assembly/Finishing - outsourced (another firm)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4b1	Assembly/Finishing - manual	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4b2	Assembly/Finishing - conveyor/assembly (static/semi-automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4b3	Assembly/Finishing - conveyor/assembly (dynamic/automated)	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4b4	Assembly/Finishing - injection machine	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4b5	Assembly/Finishing - 3D printing	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c11_4b6	Assembly/Finishing - Other	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c11_4c	Assembly/Finishing - MOST used method	Numeric	-9 Don't know 1 Assembly/Finishing - manual 2 Assembly/Finishing - conveyor/assembly (static/semi-automated) 3 Assembly/Finishing - conveyor/assembly (dynamic/automated) 4 Assembly/Finishing - injection machine 5 Assembly/Finishing - 3D printing 6 Assembly/Finishing - Other
c11_4d	Years using c11_4b3, c11_4b4, c11_4b5	Numeric	-9 Don't Know -7 Not Applicable
d1a	Purchase/Lease - Equip. or Mach.	Numeric	-9 Don't know 1 Yes, new 2 Yes, second hand 3 Yes, both (new and second hand) 4 No
d1b	Purchase or Lease - Software License	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d1c	Dev., Custom. or Modif. of Machine or Software	Numeric	-9 Don't Know -7 Not Applicable 1 Yes

d1d	Partnership - Development	Numeric	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d1e	Most contributing partner - Software/Machine Dev	Numeric	
			-9 Don't know
			1 Academic or research organization
			2 Other enterprises
			3 Both
d2a	Most used info. source for decision making	Numeric	
			-9 Don't know
			1 Oth. firms in the sector
			2 Oth. firms in the locality, but diff. sector
			3 Suppliers or buyers
			4 Industrial or trade assoc.
			5 Public tech. extension services
			6 Private consultants
			7 Fairs, events, and missions
			8 Other
d2b	Firm with >= 50 employees in around 50 kms	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d2c	Business Relationship - >= 50 emp. and around 50 kms	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d2d	Business Relationship - Multinational firm	Numeric	
			-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
d2e	CEO Experience - Large firm in same sector/multinational firm	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d3a	Loan - mach., equip or licensing	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d3b	Interest rate on loan	Numeric	
			-9 Don't Know
			-7 Not Applicable
d3c	No. - needed to borrow but not get it	Numeric	
			-9 Don't Know
			-7 Not Applicable
d4a	Formal Incentives - Money, gift, or recognition	Numeric	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
d4b	No. KPIs monitored	Numeric	
			-9 Don't know
			1 1-2 key performance indicators
			2 3-9 key performance indicators
			3 10 or more key performance indicators
			4 No key performance indicators
d4c	Frequency monitoring the KPIs	Numeric	
			-9 Don't know
			1 Yearly
			2 Quarterly
			3 Monthly

d4d	Time frame - production targets	Numeric	4 Weekly 5 Daily 6 Hourly or more frequently 7 Never -9 Don't know 1 Short-term (< 1 yr) prod. targets 2 Long-term (>=1 yr) prod. targets 3 Comb. of short and long-term prod. targets 4 No prod. targets
d5a	Hired engineers, computer programmers, or eq.	Numeric	-9 Don't know 1 Yes, hired 2 Yes, tried but not hired 3 No
d5b	Challenge to hiring engineers, computer programmers, or equivalent	Numeric	-9 Don't know 1 No challenges 2 Lack of available prof. 3 Lack of available high-skill prof. 4 High salaries required
d5c	Used external consultants or organisations	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d5d	Main source of external consultants or organisations	Numeric	-9 Don't know 1 Universities 2 Government agency 3 Other local companies 4 Foreign company

d5e	Why not consultants or organisations	Numeric	<ul style="list-style-type: none"> 5 Business associations 6 Other sources -9 Don't know 1 DK. any consultant or organization 2 Lack of trust in the service quality 3 Too costly or not convinced of the economic benefit 4 There was no need 5 Other
d5f	Adjustment of labour during technological changes	Numeric	<ul style="list-style-type: none"> -9 Don't know 0 No changes to N of workers 1 Same workers & some special. training 2 Fired some workers & did not replace them 3 Hire more workers with same skills 4 Hire more workers with more special. skills 5 Other sources
d6a	Did export?	Numeric	<ul style="list-style-type: none"> -9 Don't know 1 Exported directly 2 Exported through trading firms 3 Did not export
d6b	Direct Exports (% of sales)	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable
d6c	Imported inputs, machines or equipment?	Numeric	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
d6d	Avg. final price paid (base = 100)	Integer	

d6e	Number of days from entry to customs	Numeric	-9 Don't Know -7 Not Applicable
d7a	Awareness - govt. support program/subsidy for tech. adoption	Numeric	-9 Don't Know -7 Not Applicable
d7b	Benefitted from any govt. program/subsidy	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d7c	Which kind of govt program/subsidy benefitted from	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d8a	1st obstacle to adopt technology	String	1 Information 2 Technical assistance 3 Tax incentive 4 Grant 5 Loan 6 Other Open ended
d8b	2nd obstacle to adopt technology	String	Open ended
d8c	3rd obstacle to adopt technology	String	Open ended
d8d	1st reason for the acquisition of technology	String	Open ended
d8e	2nd reason for the acquisition of technology	String	Open ended
d8f	3rd reason for the acquisition of technology	String	Open ended
e10a	Main product - % share in total sales	Numeric	-9 Don't Know -7 Not Applicable
e10b	Main product - average markup	Integer	-9 Don't Know

e1a	No. of permanent workers, full-time (ref_year1)	Integer	-7 Not Applicable
e1b	No. of permanent workers, part-time (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e1c	No. of temporary or seasonal workers, full-time (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e1d	No. of temporary or seasonal workers, part-time (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e1e	Average length of temporary or seasonal workers (ref_year1)	Numeric	-9 Don't Know -7 Not Applicable
e1f	Total share of female workers (ref_year1)	Numeric	-9 Don't Know -7 Not Applicable
e2a	No. of permanent workers, full-time (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e2b	No. of permanent workers, part-time (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e2c	No. of temporary or seasonal workers, full-time (ref_year2)	Integer	-9 Don't Know -7 Not Applicable

e2d	No. of temporary or seasonal workers, part-time (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e2e	Average length of temporary or seasonal workers (ref_year2)	Numeric	-9 Don't Know -7 Not Applicable
e2f	Total share of female workers by the end of the year (ref_year2)?	Numeric	-9 Don't Know -7 Not Applicable
e3a	No. of CEOs and Managers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3b	No. of Professionals (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3c	No. of Technicians (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3d	No. of Clerical support workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3e	No. of Production workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3f	No. of Service or sales workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e3g	Workers dedicated to R&D activities?	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
e3h	No. of workers dedicated to R&D activities?	Numeric	

e4a	No. of CEOs and Managers (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e4b	No. of Professionals (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e4c	No. of Technicians (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e4d	No. of Clerical support workers (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e4e	No. of Production workers (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e4f	No. of Service or sales workers (ref_year2)	Integer	-9 Don't Know -7 Not Applicable
e5a	% of workers - completed primary education	Numeric	-9 Don't Know -7 Not Applicable
e5b	% of workers - completed secondary education	Numeric	-9 Don't Know -7 Not Applicable
e5c	% of workers - vocational training	Numeric	-9 Don't Know -7 Not Applicable
e5d	% of workers - completed college degree or more	Numeric	-9 Don't Know -7 Not Applicable

e5e	No. of workers - engineering or applied science	Integer	-9 Don't Know -7 Not Applicable
e5f	No. of workers - MBA, Masters or Doctoral degree	Numeric	-9 Don't Know -7 Not Applicable
e6a	Total sales (ref_year1)	long	-9 Don't Know -7 Not Applicable
e6b	Total sales (ref_year2)	long	-9 Don't Know -7 Not Applicable
e7a	Total labor cost (ref_year1)	long	-9 Don't Know -7 Not Applicable
e7b	Total material cost (ref_year1)	double	-9 Don't Know -7 Not Applicable
e7c	Total energy cost (ref_year1)	double	-9 Don't Know -7 Not Applicable
e7d	Operation cost (ref_year1)	double	-9 Don't Know -7 Not Applicable
e8a	Equipment cost (ref_year1)	long	-9 Don't Know -7 Not Applicable
e8b	Building cost (ref_year1)	long	-9 Don't Know -7 Not Applicable
e9a	Salaries - CEOs and Managers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e9b	Salaries - Professionals (ref_year1)	Integer	-9 Don't Know -7 Not Applicable

e9c	Salaries - Technicians (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e9d	Salaries - Clerical support workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e9e	Salaries - Production workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable
e9f	Salaries - Service or sales workers (ref_year1)	Integer	-9 Don't Know -7 Not Applicable