

Codebook

Brazil 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	double		
			-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
s7	Screeener employment size	double		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 %	double		
			-9	Don't Know
			-7	Not Applicable
a4b	Founder - Ownership	double		
			-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	double	-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	Numeric	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	Numeric	-9 Don't Know -7 Not Applicable
a7a	Top Manager - Experience Same Sector	double	-9 Don't Know -7 Not Applicable
a7b	Top Manager - Female	double	-9 Don't Know -7 Not Applicable 1 Yes

a7c	Top Manager - Highest Education	double	<ul style="list-style-type: none"> 2 No -9 Don't know 1 Primary school 2 Secondary school 3 Complete high-school 4 College degree 5 Post-Graduation (MBA, Master or PhD) 6 Vocational training
a7d	Top Manager - Studied Abroad	double	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
b10a	Supply Mgt. - MOST used method	double	<ul style="list-style-type: none"> 1 Suppliers - manual search 2 Suppliers - management of supply chain info 3 Suppliers - online social media 4 Suppliers - SRM (not integrated w prod planning) 5 Suppliers - SRM (integrated w prod planning) 6 Suppliers - other
b10b	Searching employees - Procedure	Numeric	<ul style="list-style-type: none"> -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

b10c	Years using b10a4, b10a5	double	6 Other -9 Don't Know -7 Not Applicable
b11a1	Marketing - Face to Face Chat	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a2	Marketing - Online Chat	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a3	Marketing - Structured Surveys	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a4	Marketing - CRM	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11a5	Marketing - Big Data Analytics	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b11b	Marketing - MOST used method	double	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	double	-9 Don't Know -7 Not Applicable
b12a1	Fabrication - Manual	double	

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a2	Fabrication - Machines w/o computer	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a3	Fabrication - Computer	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a4	Fabrication - Robots	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a5	Fabrication - Additive manufacturing	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a6	Fabrication - Other Adv. Processes	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12a7	Fabrication - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b12b	Fabrication - MOST used method	double	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	double	-9 Don't Know
			-7 Not Applicable
b13a	Direct sale	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b1	Sales - Establishment Premises	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b2	Sales - Phone, email or sales representatives	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b3	Sales - Social media platforms/apps	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b4	Sales - Online Sales (ext. dig. platforms)	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b5	Sales - Online Sales (own website)	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
b13b6	Sales - Electronic orders	double	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

b13b7	Sales - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b13c	Sales - MOST used method	double	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	double	-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)	double	-9 Don't Know -7 Not Applicable
b13e3	Sales share (%) - electronic orders	Numeric	-9 Don't Know -7 Not Applicable
b14a1	Payment - goods exchange	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a2	Payment - cash	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No

b14a3	Payment - Cheque, voucher, bank wire	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a4	Payment - Cards	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a5	Payment - Online/electronic	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a6	Payment - Online (platforms)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a7	Payment - Cryptocurrency	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14a8	Payment - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b14b	Payment - MOST used method	double	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	double	-9 Don't Know -7 Not Applicable
b15a1	Quality Control - Manual, Visual or Written	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a2	Quality Control - Human Inspection	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a3	Quality Control - Statistical Control	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a4	Quality Control - Automated	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15a5	Quality Control - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b15b	Quality Control - MOST used method	double	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

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	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b1b	Power Outages - Year	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b1c	Power Outages - Monthly	double	-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	double	-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	double	-9 Don't Know -7 Not Applicable
b4b	No. of Tablets or Smartphones	double	-9 Don't Know -7 Not Applicable
b5a	Internet connection	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b5b	Fastest Internet Connection	double	-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	Open ended
b5d	Length of the Internet service down-hours	Numeric	-9 Don't Know

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

b8a3	Business Administration - Mobile Apps or Digital Platform	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a4	Business Administration - Computers (specialised softwares)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a5	Business Administration - ERP	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8a6	Business Administration - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b8b	Business Administration - MOST used method	double	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	double	

			-9 Don't Know -7 Not Applicable
b9a1	Production Planning - Handwritten processes	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a2	Production Planning - Computers (standard softwares)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a3	Production Planning - Mobile Apps or digital platforms	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a4	Production Planning - Specialized software	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a5	Production Planning - ERP	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9a6	Production Planning - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
b9b	Production Planning - MOST used method	double	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	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a2	Crops: Info. sources - TV	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a3	Crops: Info. sources - Non-internet mobile	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a4	Crops: Info. sources - Mobile internet tech	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a5	Crops: Info. sources - Meet other producers	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_0a6	Crops: Info. sources - Pub. or Pvt. agent visit	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c1_0a7	Crops: Info. sources - Precision agriculture	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_0b1	Crops: Info. sources - MOST relevant source	long	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	long	-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	long	-9 Don't Know -7 Not Applicable
c1_0c6	Rent tractor, equipment, or machines	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

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

c1_1b3	Land prep - Manually operated machines	long	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1b4	Land prep - Digitally operated tractors or equipment	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1b5	Land prep - Other	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_1c	Land prep - MOST used method	long	
			-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	long	
			-9 Don't Know
			-7 Not Applicable
c1_2a1	Product requires irrigation	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_2b1	Irrig.- Rain-fed, no additional irrig.	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c1_2b2	Irrig. - Manual irrig.	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b3	Irrig. - Surface Flood Irrig.	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b4	Irrig. - Small Pump	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b5	Irrig. - Drip, localized, underground, Sprinkler, centre pivot	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b6	Irrig. - Automated	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2b7	Irrig.- Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_2c	Irrig. - MOST used method	long	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	long	

c1_3a1	Weeding/pest control - in house	long	-9 Don't Know -7 Not Applicable
c1_3a2	Weeding/pest control - outsourced (another unit - same enterprise)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3a3	Weeding/pest control - outsourced (another enterprise)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b1	Weeding/pest control - Manual application	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b3	Weeding/pest control - Biological methods	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b5	Weeding/pest control - Advanced precision agriculture	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_3b6	Weeding/pest control - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_3c	Weeding/pest control - MOST used method	long	<ul style="list-style-type: none"> 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	long	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable
c1_3e	Use organic or chemicals for weeding/pest control	long	<ul style="list-style-type: none"> -9 Don't know 1 Organic 2 Chemical 3 Both
c1_4a1	Harvesting, training or pruning - in house	long	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4a2	Harvesting, training or pruning - outsourced (another unit - same enterprise)	long	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4a3	Harvesting, training or pruning - outsourced (another enterprise)	long	<ul style="list-style-type: none"> -9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_4b1	Harvesting, training, or pruning - Manual	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b2	Harvesting, training, or pruning - Animal Aided	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b3	Harvesting, training, or pruning - Human-operated machines	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b4	Harvesting, training, or pruning - Manually mechanised	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b5	Harvesting, training, or pruning - Digitally automated	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4b6	Harvesting, training, or pruning - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_4c	Harvesting, training, or pruning - MOST used method	long	-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	long	
			-9 Don't Know
			-7 Not Applicable
c1_5a1	Storage - in house	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5a2	Storage - outsourced (another unit - same firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5a3	Storage - outsourced (another firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b1	Storage facility - Precarious	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c1_5b2	Storage facility - Protected (w/o temp. control)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c1_5b3	Storage facility - Special Storage (temp. control)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_5b4	Storage facility - High-end central storage	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_5b5	Storage facility - Cont. temp. monitoring	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_5b6	Storage facility - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_5c	Storage facility - MOST used	long	-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	long	-9 Don't Know -7 Not Applicable
c1_6a1	Packing - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c1_6a2	Packing - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6a3	Packing - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6b1	Packing - Manual	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6b2	Packing - Human-operated mech. equip.	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6b3	Packing - Automated	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6b4	Packing - Modified atmosphere	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6b5	Packing - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c1_6c	Packing - MOST used method	long	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	long	-9 Don't Know
			-7 Not Applicable
c2_0a1	Livestock: Info sources - Radio	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a2	Livestock: Info sources - TV	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a3	Livestock: Info sources - Non-internet mobile	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a4	Livestock: Info sources - Mobile internet tech	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a5	Livestock: Info sources - Meet other producers	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a6	Livestock: Info sources - Pub or pvt agen visits	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_0a7	Livestock: Info sources - Precision agri tools	long	-9 Don't Know
			-7 Not Applicable
			1 Yes

c2_0b	Livestock: Info sources - MOST relevant source	Numeric	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	long	-9 Don't Know -7 Not Applicable
c2_0c2	Livestocks: No. of acres RENTED or LEASED FROM OTHERS	long	-9 Don't Know -7 Not Applicable
c2_0c3	Livestocks: No. of acres RENTED or LEASED TO OTHERS	long	-9 Don't Know -7 Not Applicable
c2_0c4	Livestocks: No. of acres OPERATES Total	long	-9 Don't Know -7 Not Applicable
c2_0d	Process production - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1a1	Breeding/genetic - in house	long	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c2_1a2	Breeding/genetic - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1a3	Breeding/genetic - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b1	Breeding/genetic - Breed substitution	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b2	Breeding/genetic - Inbreeding or Crossbreeding	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b3	Breeding/genetic - Artificial insemination (AI)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b4	Breeding/genetic - Selective breeding	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_1b5	Breeding/genetic - Other	long	-9 Don't Know -7 Not Applicable 1 Yes

c2_1c	Breeding/genetic - MOST used method	long	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	long	-9 Don't Know -7 Not Applicable
c2_2a1	Animal nutrition/feeding - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2a2	Animal nutrition/feeding- outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2a3	Animal nutrition/feeding - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b1	Animal nutrition - Household waste or fibrous crop residues	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c2_2b2	Animal nutrition - Natural grasslands and pastures	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b3	Animal nutrition - Integrated crop-livestock systems	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b4	Animal nutrition - Production of forage crops	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b5	Animal nutrition - Production of supplementary feed	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b6	Animal nutrition - Manu. or mixing of feed	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b7	Animal nutrition - Prod. of genetically-modified feed	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_2b8	Animal nutrition - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c2_2c	Animal nutrition - MOST used method	long	-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
c2_2d	Years using c2_2b5, c2_2b6, c2_2b7	long	-9 Don't Know -7 Not Applicable
c2_3a1	Animal healthcare - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3a2	Animal healthcare - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_3a3	Animal healthcare - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes

c2_3b1	Animal healthcare - Rapid diagnostic tests	long	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3b2	Animal healthcare - Pest sprays	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3b3	Animal healthcare - Vaccines	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3b4	Animal healthcare - DNA or RNA vaccine	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3b5	Animal healthcare - Disease med.	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3b6	Animal healthcare - Other	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_3c	Animal healthcare - MOST used method	long	-9 Don't Know
			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	long	
			-9 Don't Know
			-7 Not Applicable
c2_4a1	Herd mgt/monitoring - in house	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4a2	Herd mgt/monitoring - outsourced (another unit - same firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4a3	Herd mgt/monitoring - outsourced (another firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b1	Herd mgt/monitoring - Human	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b2	Herd mgt/monitoring - Animal-aided	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b3	Herd mgt/monitoring - Feedlots or grazing	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes

c2_4b4	Herd mgt/monitoring - Automated cameras/video	long	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b5	Herd mgt/monitoring - Unmanned aerial	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b6	Herd mgt/monitoring - Analog tracking	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b7	Herd mgt/monitoring - Digital tracking	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4b8	Herd mgt/monitoring - Other	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_4c	Herd mgt/monitoring - MOST used method	long	
			-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	long	-9 Don't Know
			-7 Not Applicable
c2_5a1	Transp. livestock - in house	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5a2	Transp. livestock - outsourced (another unit - same enterprise)	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5a3	Transp. livestock - outsourced (another enterprise)	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5b1	Transp. livestock - Manual	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5b2	Transp. livestock - Non-motorized vehicles	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c2_5b3	Transp. livestock - Motorized vehicles	long	-9 Don't Know
			-7 Not Applicable
			1 Yes

c2_5b4	Transp. livestock - Specialized/climate-controlled vehicles	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_5b5	Transp. livestock - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c2_5c	Transp. - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c3_0a1	Regulated/inspected by govt. agency	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_0a2	Main agency regulating	String	Open ended
c3_0b1	Finished - shelf stable	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_0b2	Finished - fresh/perishable	double	-9 Don't Know -7 Not Applicable 1 Yes

c3_1a1	Input testing - in house	double	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1a2	Input testing - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1a3	Input testing - outsourced (another firm)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b1	Input testing - Sensory	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b2	Input testing - Review of supplier testing	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b3	Input testing - Non- computer-controlled	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b4	Input testing - Computer testing	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_1b5	Input testing - Other	double	-9 Don't Know -7 Not Applicable 1 Yes

c3_1c	Input testing - MOST used method	double	2 No -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	long	-9 Don't Know -7 Not Applicable
c3_2a1	Food prep. - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2a2	Food prep. - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2a3	Food prep. - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b1	Food prep. - Manual	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b2	Food prep. - Mech. equipment (human force)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c3_2b3	Food prep. - Power equipment (human interaction)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b4	Food prep. - Power equipment (computers or robotics, minimal int.)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2b5	Food prep. - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_2c	Food prep. - MOST used method	double	-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	double	-9 Don't Know -7 Not Applicable
c3_3a1	Anti-bacterial - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3a2	Anti-bacterial - outsourced (another unit - same firm)	long	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c3_3a3	Anti-bacterial - outsourced (another firm)	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b1	Anti-bacterial - Minimal-processing preservation	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b2	Anti-bacterial - Anti-bacterial wash or soaking	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b3	Anti-bacterial - Thermal Processing	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b4	Anti-bacterial - Other adv. methods	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3b5	Anti-bacterial - Other	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_3c	Anti-bacterial - MOST used method	double	
			-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	long	
			-9 Don't Know
			-7 Not Applicable
c3_4a1	Food pkg. - in house	double	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4a2	Food pkg. - outsourced (another unit - same firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4a3	Food pkg. - outsourced (another firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b1	Food pkg. - Manual	double	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b2	Food pkg. - Human-operated mech. equip.	double	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b3	Food pkg. - Power equip. (human interaction)	double	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c3_4b4	Food pkg. - Power equip. (comp./robotics, min. human int.)	double	

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_4b5	Food pkg. - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_4c	Food pkg. - MOST used method	double	-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	double	-9 Don't Know -7 Not Applicable
c3_5a1	Store food - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5a2	Store food - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5a3	Store food - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5b1	Food storage - Minimal protection (some exposure)	double	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c3_5b2	Food storage - Ambient conditions (closed building)	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5b3	Food storage - Some climate control (secured building)	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5b4	Food storage - Automated climate (security-controlled building)	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5b5	Food storage - Other	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c3_5c	Food storage - MOST used method	double	
			-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	double	-9 Don't Know -7 Not Applicable
c4_0a1	Prod. material - Printed fabric	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a2	Prod. material - White fabric	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a3	Prod. material - Fabric threads	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0a4	Prod. material - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b1	Garments prod.- Basic	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b2	Garments prod. - Fashion	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b3	Garments prod. - Sports	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0b4	Garments prod. - Protective apparel	long	-9 Don't Know -7 Not Applicable 1 Yes

c4_0b5	Garments prod. - Other	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c1	Finishes - Silk screen	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c2	Finishes - Embroidery	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c3	Finishes - Washing	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c4	Finishes - Waterproofing	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_0c5	Finishes - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_1a1	Provide files for design	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_1a2	Most common file provd.	long	-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

c4_1a3	Design drawing - in house	long	6 Other
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1a4	Design drawing - outsourced (another unit - same firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1a5	Design drawing - outsourced (another firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b1	Design drawing - Manual/hand-draw	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b2	Design drawing - Digital/semi-digital design	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b3	Design drawing - CAD	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1b4	Design drawing - Other	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_1c	Design drawing - MOST used method	long	
			-9 Don't Know

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

c4_2b4	Cutting - Automatic/Computerized cutting machine (no Laser)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b5	Cutting - Automatic/Computerized cutting machine (Laser)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2b6	Cutting - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_2c	Cutting - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_3a1	Sewing - in house	long	-9 Don't Know

			-7 Not Applicable
			1 Yes
			2 No
c4_3a2	Sewing - outsourced (another unit - same firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3a3	Sewing - outsourced (another firm)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b1	Sewing - Manually	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b2	Sewing - Machine (manually operated)	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b3	Sewing - Semi-automated machines	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b4	Sewing - Automated machines	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b5	Sewing - 3D Knitting	long	
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c4_3b6	Sewing - Other	long	
			-9 Don't Know
			-7 Not Applicable

c4_3c	Sewing - MOST used method	long	1 Yes 2 No
			-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	long	-9 Don't Know -7 Not Applicable
c4_4a1	Finishing/ironing- in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4a2	Finishing/ironing - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4a3	Finishing/ironing - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b1	Finishing/ironing - Basic manual ironing	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b2	Finishing/ironing - Electric high-pressure steam iron	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b3	Finishing/ironing - Tunnel finisher	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b4	Finishing/ironing - Form finishing machine	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b5	Finishing/ironing - High tech pressing machine	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4b6	Finishing/ironing - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c4_4c	Finishing/ironing - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable

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

c5_1b5	Assembly/fabrication - Robots	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b6	Assembly/fabrication - Additive manufacturing	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1b7	Assembly/fabrication - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_1c	Assembly/fabrication- MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c5_2a1	Body press/welding - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c5_2a2	Body press/welding - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2a3	Body press/welding - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b1	Body press/welding - Pressing of skin panels (operators)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b2	Body press/welding - Pressing of structural components (operators)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b3	Body press/welding - Welding of main body (operators)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b4	Body press/welding - Pressing of skin panels (automated)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b5	Body press/welding - Pressing of structural components (automated)	double	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c5_2b6	Body press/welding - Welding of main body (automated)	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2b7	Body press/welding - Other	double	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_2c	Pressing/welding method - MOST used method	long	
			-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	long	
			-9 Don't Know -7 Not Applicable
c5_3a1	Painting - in house	double	

c5_3a2	Painting - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3a3	Painting - outsourced (another firm)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b1	Painting - Water-based painting (operators)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b2	Painting - Solvent-based painting (operators)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b3	Painting - Water-based painting (automated)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b4	Painting - Solvent-based painting (automated)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_3b5	Painting - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c5_3c	Painting - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c5_4a1	Plastic injection molding - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4a2	Plastic injection molding - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4a3	Plastic injection molding - outsourced (another firm)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b1	Plastic injection- Non-visible interior plastic (operators)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c5_4b2	Plastic injection - Plastic exterior body parts (operators)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b3	Plastic injection- Non-visible interior plastic (robotics)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b4	Plastic injection - Plastic exterior body parts (robotics)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4b5	Plastic injection - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c5_4c	Plastic injection - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable

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

c5_5c	Productive asset mgt. - MOST used method	long	-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	double	-9 Don't Know -7 Not Applicable
c6_0a1	Produce tablets and capsules	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a2	Produce creams and ointments	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a3	Produce eye and ear solutions	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0a4	Produce syrups and dry powders	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0b1	Main product produced	long	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	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_0c2	Lead researchers - direct employees	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a1	Mix raw mat./compounding in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a2	Mix raw mat./ compounding - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1a3	Mix raw mat./compounding outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b1	Air filtration - Unfiltered air	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b2	Air filtration - Basic	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b3	Air filtration - HEPA	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c6_1b4	Air filtration - Ultra HEPA, pressurization control	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1b5	Air filtration - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1c	Air filtration - MOST used method	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_1d	Years using c6_1b3, c6_1b4	long	-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_2b1	Weighting - Beam Scales	long	-9 Don't Know -7 Not Applicable -9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_2b2	Weighting - Analog Scales	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_2b3	Weighting - Electronic Scales	long	-9 Don't Know -7 Not Applicable 1 Yes

c6_2b4	Weighting - Automated Weighing	long	2 No
			-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_2b5	Weighting - Other	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_2c	Weighting - MOST used method	long	-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	long	-9 Don't Know
			-7 Not Applicable
c6_3b1	Mixing/compounding - Manual	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_3b2	Mixing/compounding - Planetary Mixers OR homogenizers	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c6_3b3	Mixing/compounding - High Speed, High Shear Granulators	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No

c6_3b4	Mixing/compounding - Fluid Bed Processors (not with syrups)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3b5	Mixing/compounding - Fully Automated Compounding	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3b6	Mixing/compounding - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_3c	Mixing/compounding - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c6_4a1	Compression/encapsulation in house	long	-9 Don't Know -7 Not Applicable

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

c6_4c	Compression/encapsulation - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c6_5a1	Quality control - in-house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5a2	Quality control - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5a3	Quality control - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5b1	Quality control - Manual, titrimetric/chromatographic	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5b2	Quality control - Elec. chromatography	long	-9 Don't Know

			-7 Not Applicable 1 Yes 2 No
c6_5b3	Quality control - Elec. chromatography w data acquisition	long	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5b4	Quality control - Other	long	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_5c	Quality Control - MOST used method	long	
			-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	long	
			-9 Don't Know -7 Not Applicable
c6_6a1	Package pharma. products - in house	long	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c6_6a2	Package pharma. products - outsourced (another unit - same firm)	long	
			-9 Don't Know -7 Not Applicable 1 Yes 2 No

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

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

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

			1 Yes 2 No
c7_2b3	Pricing - Automated promotional	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2b4	Pricing - Dynamic pricing systems	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2b5	Pricing - Personalized pricing (predictive analytics)	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2b6	Pricing - Other	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_2c	Pricing - MOST used method	double	-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	double	-9 Don't Know -7 Not Applicable
c7_2da	Regulation - price mechanism	double	-9 Don't Know

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

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

			2	No
c7_4b2	Inventory - Computer databases (manual updates)	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
c7_4b3	Inventory - WMS (specialised software)	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
c7_4b4	Inventory - CAO, vendor-managed, and/or radio-frequency identification	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
c7_4b5	Inventory - AS/RS	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
c7_4b6	Inventory - Other	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
c7_4c	Inventory - MOST used method	double	-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	double	-9 Don't Know -7 Not Applicable
c7_5a1	Ads - in house	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5a2	Ads - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5a3	Ads - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b1	Ad channels - Paper based communication	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b2	Ad channels - Radio, Billboards, TV	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b3	Ad channels - Email or mobile phone	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c7_5b4	Ad channels - Social Media	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No

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

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

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

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

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

c8_3c	Loan app - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c8_4a1	Credit approvals - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4a2	Credit approvals - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4a3	Credit approvals - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b1	Credit approvals - Analyst (paper-based)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b2	Credit approvals - Analyst (digital info)	long	-9 Don't Know -7 Not Applicable 1 Yes

c8_4b3	Credit approvals - Automated	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b4	Credit approvals - Algorithm (AI or Big-Data)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4b5	Credit approvals - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_4c	Credit approvals - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c8_5a1	Operational supp. - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c8_5a2	Operational supp. - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable

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

			-7 Not Applicable
			1 Yes
			2 No
c9_0a2	Transport serv. - Freight	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0a3	Transport serv. - Other	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b1	Fleet type - Trucks	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b2	Fleet type - Cars	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b3	Fleet type - Motorcycle	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c9_0b4	Fleet type - Others	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
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	long	

				-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1a2	Load optimization - outsourced (another unit - same firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1a3	Load optimization - outsourced (another firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b1	Transportation planning - handwritten info.	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b2	Transportation planning - electronic file share	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b3	Transportation planning - installed software	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b4	Transportation planning - real time info. with ERP	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_1b5	Transportation planning - Other	long		-9 Don't Know -7 Not Applicable 1 Yes

c9_1c	Transportation planning - MOST used method	long	2 No -9 Don't know Information collected by non-specialized workers to create load plans 1 Information collected by electronic file share (e.g. Email or FAX to create load plans) 2 Batch information collected by software installed ERP to create ERP generated load plans 3 Real time information by online software interface with ERP to create load plans 4 5 Other
c9_1d	Years using c9_1b3, c9_1b4	long	-9 Don't Know -7 Not Applicable
c9_2a1	Execute transp. load plans - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2a2	Execute transp. load plans - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2a3	Execute transp. load plans - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No

c9_2b1	Loading - Manual process (fax, text, phone)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b2	Loading - Manual process (dig. platforms)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b3	Loading - web-based	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b4	Loading - specific software interface via Internet	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b5	Loading - file exchange (ERP integrated apps)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2b6	Loading - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_2c	Loading - MOST used method	long	-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

				Loading - file exchange 5 (ERP integrated apps) 6 Loading - Other
c9_2d	Years using c9_2b3, c9_2b4, c9_2b5	long		-9 Don't Know -7 Not Applicable
c9_3a1	Monitor load/delivery - in house	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3a2	Monitor load/delivery - outsourced (another unit - same firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3a3	Monitor load/delivery - outsourced (another firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b1	Monitoring load/delivery - Event driven (fax, text, phone calls)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b2	Monitoring load/delivery - Event driven (digital)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b3	Monitoring load/delivery - Paper documentation	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No

c9_3b4	Monitoring load/delivery - installed softwares	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b5	Monitoring load/delivery - ERP integrated apps	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3b6	Monitoring load/delivery - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_3c	Transportation monitoring - MOST used method	long	-9 Don't know Monitoring load/delivery - Event driven (fax, text, 1 phone calls) Monitoring load/delivery - 2 Event driven (digital) Monitoring load/delivery - 3 Paper documentation Monitoring load/delivery - 4 installed softwares Monitoring load/delivery - 5 ERP integrated apps Monitoring load/delivery - 6 Other
c9_3d	Years using c9_3b3, c9_3b4, c9_3b5	long	-9 Don't Know -7 Not Applicable
c9_4a1	Transport performance - in house	long	-9 Don't Know

				-7 Not Applicable
				1 Yes
				2 No
c9_4a2	Transport performance - outsourced (another unit - same firm)	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4a3	Transport performance - outsourced (another firm)	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4b1	Transp. perf. - manually	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4b2	Transp. perf. - computer (non-specialized software)	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4b3	Transp. perf. - computer (specialised transp. reporting)	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4b4	Transp. perf. - installed software	long		
				-9 Don't Know
				-7 Not Applicable
				1 Yes
				2 No
c9_4b5	Transp. perf. - file exchange between ERP integrated	long		
				-9 Don't Know
				-7 Not Applicable

c9_4b6	Transp. perf. - Other	long	1 Yes 2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_4c	Transp. Perf. - MOST used method	long	-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 6 Transp. perf. - Other
c9_4d	Years using c9_4b3, c9_4b4, c9_4b5	long	-9 Don't Know -7 Not Applicable
c9_5a1	Fleet assets - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5a2	Fleet assets - outsourced (another unit - same firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5a3	Fleet assets - outsourced (another firm)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5b1	Fleet management - manual	long	

			-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5b2	Fleet management - electronic file	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5b3	Fleet management - ETM	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5b4	Fleet management - ERP and software	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5b5	Fleet management - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c9_5c	Fleet management - MOST used method	long	-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	long	-9 Don't Know -7 Not Applicable
c10_0	Complexity of health treatment	long	-9 Don't know

			-7 Not applicable
			1 Level 1: Primary Care
			Level 2: Specialty Physician
			2 Care
			Level 3: Acute Care General Hospital or Ambulatory
			3 Surgical Center
			Level 4: Specialty Acute
			4 Care Hospital
			5 Other
c10_0a	No. of patients per day	long	-9 Don't Know
			-7 Not Applicable
c10_0b	No. of patients night, per day	long	-9 Don't Know
			-7 Not Applicable
c10_0c	No. of full-time doctors	long	-9 Don't Know
			-7 Not Applicable
c10_0d	No. of full-time nurses	long	-9 Don't Know
			-7 Not Applicable
c10_1a1	Hosp. facilities - ER	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c10_1a10	Hosp. facilities - ultrasound machine	Numeric	Open ended
c10_1a11	Hosp. facilities - Pulse oximetry	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c10_1a12	Hosp. facilities - ECG	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c10_1a2	Hosp. facilities - Postoperative care area	long	-9 Don't Know
			-7 Not Applicable
			1 Yes

c10_1a3	Hosp. facilities - ICU	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a4	Hosp. facilities - Blood Bank	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a5	Hosp. facilities - Testing labs	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a6	Hosp. facilities - X-ray	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a7	Hosp. facilities - ultrasound machine	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a8	Hosp. facilities - CT scan	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1a9	Hosp. facilities - MRI machine	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_1b1	Hosp. facilities - ER no.	long	-9 Don't Know -7 Not Applicable Open ended
c10_1b10		Numeric	
c10_1b11	Hosp. facilities - Pulse oximetry no.	long	-9 Don't Know

c10_1b12	Hosp. facilities - ECG no.	long	-7 Not Applicable
			-9 Don't Know
			-7 Not Applicable
c10_1b2	Hosp. facilities - Postoperative care area no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b3	Hosp. facilities - ICU no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b4	Hosp. facilities - Blood Bank no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b5	Hosp. facilities - Testing labs no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b6	Hosp. facilities - X-ray no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b7	Hosp. facilities - ultrasound machine no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b8	Hosp. facilities - CT scan no.	long	-9 Don't Know
			-7 Not Applicable
c10_1b9	Hosp. facilities - MRI machine no.	long	-9 Don't Know
			-7 Not Applicable
c10_2a1	Appt. - in house	long	-9 Don't Know
			-7 Not Applicable
			1 Yes
			2 No
c10_2a2	Appt. - outsourced (another unit - same firm)	long	-9 Don't Know
			-7 Not Applicable
			1 Yes

c10_2a3	Appt. - outsourced (another firm)	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b1	Scheduling - Personal visit and paper	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b2	Scheduling - Phone call, SMS, or Email	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b3	Scheduling - Software or app (w/o automated reminders)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b4	Scheduling - Software or app (w automated reminders)	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2b5	Scheduling - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_2c	Scheduling - MOST used method	long	-9 Don't know 1 Scheduling - Personal visit and paper 2 Scheduling - Phone call, SMS, or Email

				Scheduling - Software or app (w/o automated reminders) 3
				Scheduling - Software or app (w automated reminders) 4
				Scheduling - Other 5
c10_2d	Years using c10_2b3, c10_2b4	long		-9 Don't Know -7 Not Applicable
c10_3a1	Patient records - in house	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3a2	Patient records - outsourced (another unit - same firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3a3	Patient records - outsourced (another firm)	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b1	Patient records - Handwritten process	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b2	Patient records - Digital patient records	long		-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b3	Patient records - EHR	long		-9 Don't Know -7 Not Applicable 1 Yes

c10_3b4	Patient records - Cloud-based HER	long	2 No -9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3b5	Patient records - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_3c	Patient record - MOST used method	long	-9 Don't know 1 Handwritten process 2 patient records 3 Patient records - EHR 4 Patient records - Cloud-based HER 5 Patient records - Other
c10_3d	Years using c10_3b3, c10_3b4	long	-9 Don't Know -7 Not Applicable
c10_4a1	Pharmacy - in house	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4b1	Medication - Internal Pharmacy	long	-9 Don't know 1 Handwritten 2 Barcode/electronic id 3 Med. mgt./admin. - Other
c10_4b2	Medication - Order of medication	long	-9 Don't know -7 Not applicable 1 Manual order 2 Electronic order

c10_4c1	Med. mgt./admin. - Handwritten	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4c2	Med. mgt./admin. - Barcode/electronic id	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4c3	Med. mgt./admin. - Other	long	-9 Don't Know -7 Not Applicable 1 Yes 2 No
c10_4d	Years using c10_4c2	long	-9 Don't Know -7 Not Applicable
c10_5a1	Sepsis treat. - antibiotics	long	-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	long	-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	long	-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	long	-9 Don't know -7 Not applicable

c10_5c1	Trauma - Traction (closed fracture)	long	<p>1 It is always available</p> <p>2 It is NOT always available</p> <p>3 It is NEVER available</p> <p>-9 Don't know</p> <p>-7 Not applicable</p> <p>1 It is always available</p> <p>2 It is NOT always available</p> <p>3 It is NEVER available</p>
c10_5c2	Trauma - Open Treatment of Fracture	long	<p>-9 Don't know</p> <p>-7 Not applicable</p> <p>1 It is always available</p> <p>2 It is NOT always available</p> <p>3 It is NEVER available</p>
c10_5d1	Myocardial infarction/-strokes - defibrillation	long	<p>-9 Don't know</p> <p>-7 Not applicable</p> <p>1 It is always available</p> <p>2 It is NOT always available</p> <p>3 It is NEVER available</p>
c10_5d2	Myocardial infarction/-strokes - angiography	long	<p>-9 Don't know</p> <p>-7 Not applicable</p> <p>1 It is always available</p> <p>2 It is NOT always available</p> <p>3 It is NEVER available</p>
d1a	Purchase/Lease - Equip. or Mach.	double	<p>-9 Don't know</p> <p>1 Yes, new</p> <p>2 Yes, second hand</p> <p>3 Yes, both (new and second hand)</p> <p>4 No</p>

d1b	Purchase or Lease - Software License	double	-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 2 No
d1d	Partnership - Development	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d1e	Most contributing partner - Software/Machine Dev	Numeric	-9 Don't know Academic or research organization 1 organization 2 Other enterprises 3 Both
d2a	Most used info. source for decision making	double	-9 Don't know 1 Oth. firms in the sector Oth. firms in the locality, 2 but diff. sector 3 Suppliers or buyers 4 Industrial or trade assoc. Public tech. extension 5 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	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
d2e	CEO Experience - Large firm in same sector/multinational firm	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
d3a	Loan - mach., equip or licensing	double	-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	double	-9	Don't Know
			-7	Not Applicable
d4a	Formal Incentives - Money, gift, or recognition	double	-9	Don't Know
			-7	Not Applicable
			1	Yes
			2	No
d4b	No. KPIs monitored	double	-9	Don't know
				1-2 key performance indicators
			1	indicators

d4c	Frequency monitoring the KPIs	Numeric	3-9 key performance indicators 2 10 or more key performance indicators 3 No key performance indicators 4
d4d	Time frame - production targets	Numeric	-9 Don't know 1 Yearly 2 Quarterly 3 Monthly 4 Weekly 5 Daily 6 Hourly or more frequently 7 Never
d5a	Hired engineers, computer programmers, or eq.	Numeric	-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
d5b	Challenge to hiring engineers, computer programmers, or equivalent	Numeric	-9 Don't know 1 Yes, hired 2 Yes, tried but not hired 3 No
d5c	Used external consultants or organisations	Numeric	-9 Don't know 1 No challenges 2 Lack of available prof. 3 Lack of available high-skill prof. 4 High salaries required

d5d	Main source of external consultants or organisations	Numeric	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d5e	Why not consultants or organisations	Numeric	-9 Don't know 1 Universities 2 Government agency 3 Other local companies 4 Foreign company 5 Business associations 6 Other sources
d5f	Adjustment of labour during technological changes	Numeric	-9 Don't know DK. any consultant or organization 1 Lack of trust in the service quality 2 Too costly or not convinced of the economic benefit 3 There was no need 4 Other
d6a	Did export?	double	-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
			-9 Don't know 1 Exported directly 2 Exported through trading firms 3 Did not export

d6b	Direct Exports (% of sales)	double	-9 Don't Know -7 Not Applicable
d6c	Imported inputs, machines or equipment?	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d6d	Avg. final price paid (base = 100)	Numeric	-9 Don't Know -7 Not Applicable
d6e	Number of days from entry to customs	Integer	-9 Don't Know -7 Not Applicable
d7a	Awareness - govt. support program/subsidy for tech. adoption	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d7b	Benefitted from any govt. program/subsidy	double	-9 Don't Know -7 Not Applicable 1 Yes 2 No
d7c	Which kind of govt program/subsidy benefitted from	double	1 Information 2 Technical assistance 3 Tax incentive 4 Grant 5 Loan 6 Other
d8a	1st obstacle to adopt technology	String	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	double	-9 Don't Know -7 Not Applicable
e10b	Main product - average markup	double	-9 Don't Know -7 Not Applicable
e1a	No. of permanent workers, full-time (ref_year1)	double	-9 Don't Know -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)	Numeric	-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)	double	-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)	Numeric		-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)	double		-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)	double		-9	Don't Know
				-7	Not Applicable
e3e	No. of Production workers (ref_year1)	double		-9	Don't Know
				-7	Not Applicable

e3f	No. of Service or sales workers (ref_year1)	double	-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?	double	-9 Don't Know -7 Not Applicable
e4a	No. of CEOs and Managers (ref_year2)	Numeric	-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	double	-9 Don't Know

e5c	% of workers - vocational training	double	-7 Not Applicable
e5d	% of workers - completed college degree or more	double	-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	Integer	-9 Don't Know -7 Not Applicable
e6a	Total sales (ref_year1)	double	-9 Don't Know -7 Not Applicable
e6b	Total sales (ref_year2)	double	-9 Don't Know -7 Not Applicable
e7a	Total labor cost (ref_year1)	double	-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)	double	-9 Don't Know -7 Not Applicable
e8b	Building cost (ref_year1)	double	-9 Don't Know -7 Not Applicable

			-9 Don't Know -7 Not Applicable
e9a	Salaries - CEOs and Managers (ref_year1)	long	
			-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)	long	
			-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