
C. SECTOR SPECIFIC TECHNOLOGIES

READ THE FOLLOWING TO THE RESPONDENT BEFORE PROCEEDING:

Now, we turn to questions about methods and procedures to perform sector specific business functions

ADD SECTOR SPECIFIC QUESTIONNAIRE – SEPARATED DOCUMENT

INTERVIEWER: ASK THESE QUESTIONS ONLY FOR FIRMS THAT BELONG

TO THE SECTORS FOR WHICH SECTOR SPECIFIC QUESTIONS ARE AVAILABLE.

IF THE FIRM DO NOT BELONG TO THOSE, SKIP THIS SECTION AND GO TO SECTION D.

Agriculture (except Livestock)	C1
Livestock	C2
Food Processing	C3
Wholesale or retail	C7
Land transport	C9

C. SECTOR SPECIFIC TECHNOLOGIES

1. Agriculture (all agriculture establishments)

C1.0 Information on production planning and propriety characteristics

Question: Over the year [2020], which of these sources of information was relevant to this establishment decisions for pre-cultivation, cultivation, and harvesting?	Variable	Answer
Radio (e.g. agrometeorological information, agriculture programming, advertisements)	c1_0a1	1 = Yes 2 = No -9 = Don't know
TV (e.g. agrometeorological information, agriculture programming, advertisements)	c1_0a2	1 = Yes 2 = No -9 = Don't know
Non-internet mobile phone (e.g. SMS, Voice Calling)	c1_0a3	1 = Yes 2 = No -9 = Don't know
Mobile internet technologies (e.g. YouTube, WhatsApp, Facebook, Skype, Email, and other web applications)	c1_0a4	1 = Yes 2 = No -9 = Don't know
Meetings with other producers, producer organizations, or cooperative	c1_0a5	1 = Yes 2 = No -9 = Don't know
Demonstration or visit by public- or private-extension agents (e.g. NGOs, Agribusiness Buyers etc.)	c1_0a6	1 = Yes 2 = No -9 = Don't know
Precision agriculture tools (e.g. Farm management software, soil sensors, satellite imaging, real time data, drones, apps)	c1_0a7	1 = Yes 2 = No -9 = Don't know

Question	Variable	Answer
What was the most relevant source of information to support your decisions regarding pre-cultivation, cultivation, and harvesting during the last agricultural season?	c1_0b1	1= Radio 2 = TV 3 = Mobile phone (Non-Internet) 4 = Internet 5 = Cooperative 6 = Extension agents 7 = Farm management software 8 = Other

INTERVIEWER: Please include ALL LAND REGARDLESS OF LOCATION OR USE.

Question: What is the total amount of land owned, rented, or used by this establishment?	Variable	Answer
Total number of acres OWNED	c1_0c1	Number
Total number of acres RENTED or LEASED FROM OTHERS	c1_0c2	Number
Number of acres RENTED or LEASED TO OTHERS	c1_0c3	Number
Total number of acres available for this establishment (CAPI: CALCULATE THE NUMBER)	c1_0c4 = (c1_0c1+ c1_0c2- c1_0c3)	Number

Question	Variable	Answer
How many tractors are owned by this establishment?	c1_0c5	(number of tractors)
Does this establishment use rent tractor, equipment, or machines?	c1_0c6	1 = Yes 2 = No -7 = Not applicable
Does this establishment use any digital or online platform for renting a tractor, equipment, or machine (e.g. Uber tractor)? [CONDITION: ask this question only if c1_0c6=1]	c1_0c7	1 = Yes 2 = No -9 = Don't know

Question	Variable	Answer
What is the main source of seeds used by this establishment?	c1_0d1	1 = Own production 2 = Private providers 3 = Public programs 4 = Other
Does the seed receive any pre-treatment?	c1_0d2	1 = Yes 2 = No -9 = Don't know

Agriculture (Crops and Fruits)

C1.1 Land preparation

Question	Variable	Answer
Does this establishment conduct land preparation through its own workers? [SKIP: If c1_1a1=1 go to question c1_1b1]	c1_1a1	1 = Yes 2 = No
Is this task outsourced to workers from another unit of the same enterprise? [CONDITION: Only for multi-establishment farm (s4=1)]	c1_1a2	1 = Yes 2 = No -9 = Don't know

[SKIP: If c1_1a2=1 go to question c1_1b1]		
Is this task outsourced to other workers or enterprise? [SKIP: Go to question c1_2a1]	c1_1a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for land preparation method is used in this farm?	Variable	Answer	
Manual plowing with simple tools (hand-held hoes, split-hoes, rake)	c1_1b1	1 = Yes 2 = No	-9 = Don't know
Animal Aided Instruments (ploughs)	c1_1b2	1 = Yes 2 = No	-9 = Don't know
Tractors, motor tillers, rotators, or other equipment manually operated by workers	c1_1b3	1 = Yes 2 = No	-9 = Don't know
Tractors or other equipment supported by digital enabled technologies (e.g. GPS, software, or precision agriculture tools)	c1_1b4	1 = Yes 2 = No	-9 = Don't know
Other	c1_1b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the land preparation method used more often in this farm? [CONDITION: Ask only if the answer is YES for more than one option among c1_1b variables]	Variable c1_1c	Answer 1 = Manual plowing with simple tools 2 = Animal Aided Instruments (ploughs) 3 = Tractors, motor tillers, rotovators, equipment manually operated by workers 4 = Tractors or equipment supported by digital enabled technologies such as GPS or software 5 = Other -9 = Don't know
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Question	Variable	Answer
For how many years this establishment has been using digital enabled tractors, equipment, or precision agriculture tools for land preparation? [CONDITION: ask only if c1_1b4=1]	c1_1d	(Number of years)

C1.2 Irrigation

Question	Variable	Answer
Does this establishment production require any irrigation? [SKIP: If c1_2a1=1 go to question c1_2b1]	c1_2a1	1 = Yes 2 = No -7 = Not applicable

Question: Does this establishment use any of the following methods for irrigation?	Variable	Answer	
Rain-fed, no additional irrigation	c1_2b1	1 = Yes 2 = No	-9 = Don't know
Manual irrigation with watering cans	c1_2b2	1 = Yes 2 = No	-9 = Don't know
Surface Flood Irrigation by Gravity	c1_2b3	1 = Yes 2 = No	-9 = Don't know
Irrigation by Small Pump	c1_2b4	1 = Yes 2 = No	-9 = Don't know
Drip irrigation, localized irrigation, underground pipes, Sprinkler or Center Pivot.	c1_2b5	1 = Yes 2 = No	-9 = Don't know
Automated system controlled by sensors, software, Internet, or apps	c1_2b6	1 = Yes 2 = No	-9 = Don't know
Other	c1_2b7	1 = Yes 2 = No	-9 = Don't know

Question: What is the irrigation system used more often in this farm? [CONDITION: Ask only if the answer is YES for more than one option among c1_2b variables]	Variable c1_2c	Answer 1 = Rain-fed, no additional irrigation 2 = Manual irrigation with watering cans 3 = Surface Flood Irrigation by Gravity 4 = Irrigation by Small Pump 5 = Drip irrigation, localized irrigation, underground pipes, Sprinkler or Center Pivot. 6 = Automated system controlled by sensors, software, Internet, or apps 7 = Other -9 = Don't know

Question	Variable	Answer
For how many years has this establishment been using drip irrigation, localized irrigation, underground pipes, sprinkler, center pivot or precision agriculture tools for irrigation? [CONDITION: ask this question only if c1_2b5=1 or c1_2b6=1]	c1_2d	(Number of years)

C1.3 Weeding and pest control

Question	Variable	Answer
Does this farm conduct weeding and pest control? [SKIP: If c1_3a1=1 go to question c1_3b1]	c1_3a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same enterprise? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c1_3a2=1 go to question c1_3b1]	c1_3a2	1 = Yes 2 = No -9 = Don't know

Is this task outsourced to another enterprise? [SKIP: Go to question c1_4a1]	c1_3a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable
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Question: Does this establishment use any of the following methods for weeding and pest control?	Variable	Answer	
Manual application of herbicide, fertilizer, or pesticide	c1_3b1	1 = Yes 2 = No	-9 = Don't know
Mechanical application of herbicide, fertilizer, or pesticide	c1_3b2	1 = Yes 2 = No	-9 = Don't know
Biological methods of fertilizing, weed, or pest control	c1_3b3	1 = Yes 2 = No	-9 = Don't know
Fully-automated Variable Rate Application (VRA) tools in combination with soil and plant sensors (Precision Agriculture)	c1_3b4	1 = Yes 2 = No	-9 = Don't know
Drone Application in combination with remote sensing or on-site sensors (Advanced Precision Agriculture)	c1_3b5	1 = Yes 2 = No	-9 = Don't know
Other	c1_3b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the weeding and pest control method used more often in this propriety? [CONDITION: Ask only if the answer is YES for more than one option among c1_3b variables]	Variable c1_3c	Answer 1 = Manual application of organic herbicide, fertilizer, or pesticide 2 = Manual application of chemical herbicide, fertilizer, or pesticide 3 = Mechanical application of organic herbicide, fertilizer, or pesticide 4 = Mechanical application of chemical herbicide, fertilizer, or pesticide 5 = Biological methods of fertilizing, weed, and pest control 6 = Fully-automated Variable Rate Application (VRA) tools in combination with soil and plant sensors (Precision Agriculture) 7 = Drone Application in combination with remote sensing or on-site sensors (Advanced Precision Agriculture) 8 = Other -9 = Don't know
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Question	Variable	Answer
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For how many years has this establishment been using VRA or drone application for weeding and pest control? [CONDITION: ask this question only if c1_3b6=1 or c1_3b7=1]	c1_3d	(Number of years)
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Question:	Variable	Answer
Does this establishment use organic or chemical herbicide, fertilizer, or pesticide for weeding and pest control? [CONDITION: ASK ONLY IF c1_3b1=1 ou c1_3b1=2]	c1_3e	1 = Organic 2 = Chemical 3 = Both -9 = Don't know

C1.4 Harvesting, training, pruning

Question	Variable	Answer
Does this establishment conduct harvesting, training or pruning? [SKIP: If c1_4a1=1 go to question c1_4b1]	c1_4a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same enterprise? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c1_4a2=1 go to question c1_4b1]	c1_4a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another enterprise? [SKIP: Go to question c1_5a1]	c1_4a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for harvesting, training, or pruning?	Variable	Answer
Manual harvesting, training, pruning, or picking	c1_4b1	1 = Yes 2 = No -9 = Don't know
Animal Aided Instruments	c1_4b2	1 = Yes 2 = No -9 = Don't know
Human-operated machines or single-axle tractor, with one specific function	c1_4b3	1 = Yes 2 = No -9 = Don't know
Mechanized process with machines or tractors that combine multiple functions fully operated by the worker (without support of digital technologies)	c1_4b4	1 = Yes 2 = No -9 = Don't know
Automated process with machines or tractors that combine multiple functions supported by digital enabled technologies (e.g. GPS or computing systems integrated to tractor)	c1_4b5	1 = Yes 2 = No -9 = Don't know
Other	c1_4b6	1 = Yes 2 = No -9 = Don't know

<p>Question: What is the harvesting/training/pruning method used more often in this establishment?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c1_4b variables]</p>	<p>Variable</p> <p>c1_4c</p>	<p>Answer</p> <p>1 = Manual harvesting, training, pruning, or picking</p> <p>2 = Animal Aided Instruments</p> <p>3 = Human-operated machines or single - axle tractor, with one specific function</p> <p>4 = Mechanized process with machines or tractors that combine multiple functions (e.g. Combine harvester) fully operated by the worker (without support of digital technologies)</p> <p>5 = Automated process with machines or tractors that combine multiple functions supported by digital enabled technologies (e.g. GPS or computing systems integrated to tractor)</p> <p>6 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using mechanized or automated processes for harvesting/training/pruning?</p> <p>[CONDITION: ask this question only if c1_4b4=1 or c1_4b5=1]</p>	c1_4d	(Number of years)

C1.5 Storage (Post-Harvesting)

Question	Variable	Answer
<p>Does this establishment storage its products in house?</p> <p>[SKIP: If c1_5a1=1 go to question c1_5b1]</p>	c1_5a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm?</p> <p>[CONDITION: Only for multi-establishment firms (s4=1)]</p> <p>[SKIP: If c1_5a2=1 go to question c1_5b1]</p>	c1_5a2	1 = Yes 2 = No -9 = Don't know
<p>Is this task outsourced to another firm?</p> <p>[SKIP: Go to question c1_6a1]</p>	c1_5a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following types of storage facility?	Variable	Answer
Precarious facility with product totally or partially exposed to sun, rain and wind	c1_5b1	1 = Yes 2 = No -9 = Don't know
Storage facilities protecting from sun, rain, or wind, but without controlled temperature	c1_5b2	1 = Yes 2 = No -9 = Don't know

Special Storage facilities with cold or dry controlled environment	c1_5b3	1 = Yes 2 = No	-9 = Don't know
High-end central storage facilities, with controlled atmosphere and temperature	c1_5b4	1 = Yes 2 = No	-9 = Don't know
Continuous temperature monitoring device or digital data loggers	c1_5b5	1 = Yes 2 = No	-9 = Don't know
Other	c1_5b6	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the storage facility used more often in this farm?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c1_5b variables]</p>	<p>Variable</p> <p>c1_5c</p>	<p>Answer</p> <p>1 = Precarious facility with product totally or partially exposed to sun, rain and wind</p> <p>2 = Storage facilities protecting from sun, rain, or wind, but without controlled temperature</p> <p>3 = Special Storage facilities with cold or dry controlled environment</p> <p>4 = High-end central storage facilities, with controlled atmosphere and temperature</p> <p>5 = Continuous temperature monitoring device or digital data loggers</p> <p>6 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years this establishment has been using special storage facilities or high-end central storage facilities or continuous temperature monitoring devices for storage?</p> <p>[CONDITION: ask this question only if c1_5b3=1 or c1_5b4=1 or c1_5b5=1]</p>	c1_5d	(Number of years)

C1.6 Packing (Post-Harvesting)

Question	Variable	Answer
<p>Does this farm pack in house?</p> <p>[SKIP: If c1_6a1=1 go to question c1_6b1]</p>	c1_6a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm?</p> <p>[CONDITION: Only for multi-establishment firms (s4=1)]</p> <p>[SKIP: If c1_6a2=1 go to question c1_6b1]</p>	c1_6a2	1 = Yes 2 = No -9 = Don't know
<p>Is this task outsourced to another firm?</p> <p>[SKIP: Go to question D1]</p>	c1_6a3	1 = Yes 2 = No -9 = Don't know

		-7 = Not applicable
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Question: Does this establishment use any of the following packing methods?	Variable	Answer	
Manual packing in bags, crates, or boxes	c1_6b1	1 = Yes 2 = No	-9 = Don't know
Human-operated mechanical equipment for packing in bags, crates, or boxes	c1_6b2	1 = Yes 2 = No	-9 = Don't know
Automated packing directly linked to the harvesting, training, pruning, or picking process	c1_6b3	1 = Yes 2 = No	-9 = Don't know
Modified atmosphere packing	c1_6b4	1 = Yes 2 = No	-9 = Don't know
Other	c1_6b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the packing method used more often in this farm? [CONDITION: Ask only if the answer is YES for more than one option among c1_6b variables]	Variable	Answer
	c1_6c	1 = Manual packing in bags, crates, or boxes 2 = Human-operated mechanical equipment for packing in bags, crates, or boxes 3 = Automated packing directly linked to the harvesting, training, pruning, or picking process 4 = Modified atmosphere packing 5 = Other -9 = Don't know

Question	Variable	Answer
For how many years has this establishment been using automated packing or modified atmosphere packing for packing? [CONDITION: ask this question only if c1_6b3=1 or c1_6b4=1]	c1_6d	(Number of years)

2. Livestock (Agriculture)

C2.0. Information for production planning

Question: Over the year [2020], which of these sources of information was relevant to this establishment production decisions?	Variable	Answer
Radio (e.g. agriculture programming, advertisements)	c2_0a1	1 = Yes 2 = No -9 = Don't know
TV (e.g. agriculture programming, advertisements)	c2_0a2	1 = Yes 2 = No -9 = Don't know
Non-internet mobile phone (SMS, Voice Calling)	c2_0a3	1 = Yes 2 = No -9 = Don't know
Mobile internet technologies (e.g. YouTube, WhatsApp, Facebook, Skype, Email, and other web applications)	c2_0a4	1 = Yes 2 = No -9 = Don't know
Meetings with other producers, producer organizations, or cooperative	c2_0a5	1 = Yes 2 = No -9 = Don't know
Demonstration or visit by public- or private-extension agents (e.g. NGOs, Agribusiness Buyers etc.)	c2_0a6	1 = Yes 2 = No -9 = Don't know
Precision agriculture tools (Farm management software connected to Internet and other tool related to precision agriculture)	c2_0a7	1 = Yes 2 = No -9 = Don't know

Question	Variable	Answer
What was the most relevant source of information to support the production decisions of this establishment?	c2_0b	1 = Radio 2 = TV 3 = Mobile phone (Non-Internet) 4 = Internet 5 = Other producers 6 = Extension agents 7 = Farm management software 8 = Other

INTERVIEWER: Please include ALL LAND REGARDLESS OF LOCATION OR USE.

Question: What is the total amount of land owned, rented, or used by this establishment?	Variable	Answer

Total number of acres OWNED	c1_0c1	Number
Total number of acres RENTED or LEASED FROM OTHERS	c1_0c2	Number
Number of acres RENTED or LEASED TO OTHERS	c1_0c3	Number
Total acres OPERATES (CAPI: CALCULATE THE NUMBER)	c1_0c4 = (c1_0c1+ c1_0c2- c1_0c3)	Number

Question	Variable	Answer
Does this establishment process the production in house to sell them for final consumers?	c2_0d	1 = Yes 2 = No

C2.1. Breeding and genetics

Question	Variable	Answer
Does this farm conduct breeding and genetic procedures in house? [SKIP: If c2_1a1=1 go to question c2_1b1]	c2_1a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c2_1a2=1 go to question c2_1b1]	c2_1a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c2_2a1]	c2_1a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for breeding or genetic procedures?	Variable	Answer	
Breed substitution	c2_1b1	1 = Yes 2 = No	-9 = Don't know
Inbreeding or Crossbreeding	c2_1b2	1 = Yes 2 = No	-9 = Don't know
Artificial insemination (AI)	c2_1b3	1 = Yes 2 = No	-9 = Don't know
Selective breeding based on molecular genetics (marker-assisted selection, PCR, DNA sequencing, transgenesis, cloning, genomics)	c2_1b4	1 = Yes 2 = No	-9 = Don't know
Other	c2_1b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the breeding or genetic method used more often in this farm? [CONDITION: Ask only if the answer is YES for more than one option among c2_1b variables]	Variable c2_1c	Answer 1 = Breed substitution 2 = Inbreeding or Crossbreeding 3 = Artificial insemination (AI) 4 = Selective breeding based on molecular genetics (marker-assisted selection, PCR, DNA sequencing, transgenesis, cloning, genomics) 5 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using artificial insemination or selective breeding based on molecular genetics for breeding and genetics? [CONDITION: ask this question only if c2_1b3=1 or c2_1b4=1]	c2_1d	(Number of years)

C2.2. Nutrition and Feeding

Question	Variable	Answer
Does this farm implement animal nutrition and feeding procedure in house? [SKIP: If c2_2a1=1 go to question c2_2b1]	c2_2a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c2_2a2=1 go to question c2_2b1]	c2_2a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c2_3a1]	c2_2a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for animal nutrition?	Variable	Answer	
Household waste (food leftovers, kitchen residues etc.) or fibrous crop residues	c2_2b1	1 = Yes 2 = No	-9 = Don't know
Natural grasslands and pastures	c2_2b2	1 = Yes 2 = No	-9 = Don't know
Integrated crop-livestock systems: crop-pasture (e.g. soybean-pasture, tree-crop-pasture; tree-pasture; tree-crop)	c2_2b3	1 = Yes 2 = No	-9 = Don't know
Production of forage crops	c2_2b4	1 = Yes 2 = No	-9 = Don't know

Production of supplementary feed to grazing pastures: hay, silage, grains feed	c2_2b5	1 = Yes 2 = No	-9 = Don't know
Manufacturing or mixing of feed (use of feed mills on premises)	c2_2b6	1 = Yes 2 = No	-9 = Don't know
Production of genetically-modified feed	c2_2b7	1 = Yes 2 = No	-9 = Don't know
Other	c2_2b8	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the nutrition method used more often in this farm?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c2_2b variables]</p>	<p>Variable</p> <p>c2_2c</p>	<p>Answer</p> <p>1 = Household waste (food leftovers, kitchen residues etc.) or fibrous crop residues</p> <p>2 = Natural grasslands and pastures</p> <p>3 = Integrated crop-livestock systems: crop-pasture</p> <p>4 = Production of forage crops</p> <p>5 = Production of supplementary feed to grazing pastures: hay, silage, grains feed</p> <p>6 = Manufacturing or mixing of feed (use of feed mills on premises)</p> <p>7 = Production of genetically-modified feed</p> <p>8 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using supplementary feed to grazing pastures, manufacturing or mixing of feed, or genetically-modified feed for nutrition?</p> <p>[CONDITION: ask this question only if c2_2b5=1, c2_2b6=1, or c2_2b7=1]</p>	c2_2d	(Number of years)

C2.3. Animal healthcare

Question	Variable	Answer
<p>Does this establishment implement animal healthcare procedure in house?</p> <p>[SKIP: If c2_3a1=1 go to question c2_3b1]</p>	c2_3a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm?</p> <p>[CONDITION: Only for multi-establishment firms (s4=1)]</p> <p>[SKIP: If c2_3a2=1 go to question c2_3b1]</p>	c2_3a2	1 = Yes 2 = No -9 = Don't know
<p>Is this task outsourced to another firm?</p> <p>[SKIP: Go to question c2_4a1]</p>	c2_3a3	1 = Yes 2 = No -9 = Don't know

		-7 = Not applicable
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Question: Does this establishment use any of the following methods for animal healthcare?	Variable	Answer	
Rapid diagnostic tests (e.g pathology, bacteriology, parasitology, toxicology, serology, histology, molecular diagnostics, avian flu etc.)	c2_3b1	1 = Yes 2 = No	-9 = Don't know
Pest sprays	c2_3b2	1 = Yes 2 = No	-9 = Don't know
Vaccines (live-attenuated, inactivated or subunit)	c2_3b3	1 = Yes 2 = No	-9 = Don't know
DNA or RNA-based vaccine	c2_3b4	1 = Yes 2 = No	-9 = Don't know
Disease medication (antibiotics, coccidiostats, deworming medicine etc.)	c2_3b5	1 = Yes 2 = No	-9 = Don't know
Other	c2_3b6	1 = Yes 2 = No	-9 = Don't know

Question: What animal healthcare method used more often in this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c2_3b variables]	Variable	Answer
	c2_3c	1 = Rapid diagnostic tests (e.g. pathology, bacteriology, parasitology, toxicology, serology, histology, molecular diagnostics, avian flu etc.) 2 = Pest sprays 3 = Vaccines (live-attenuated, inactivated or subunit) 4 = DNA or RNA-based vaccine 5 = Disease medication (antibiotics, coccidiostats, deworming medicine etc.) 6 = Other -9 = Don't know

Question	Variable	Answer
For how many years this establishment has been using vaccines for animal healthcare? [CONDITION: ask this question only if c2_3b3=1 or c2_3b4=1]	c2_3d	(Number of years)

C2.4. Herd management and monitoring

Question	Variable	Answer
Does this establishment conduct herd management and monitoring in house? [SKIP: If c2_4a1=1 go to question c2_4b1]	c2_4a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c2_4a2=1 go to question c2_4b1]	c2_4a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c2_5a1]	c2_4a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for herd management and monitoring?	Variable	Answer	
Human monitoring	c2_4b1	1 = Yes 2 = No	-9 = Don't know
Animal-aided monitoring	c2_4b2	1 = Yes 2 = No	-9 = Don't know
Feedlots or grazing system	c2_4b3	1 = Yes 2 = No	-9 = Don't know
Automated cameras and video	c2_4b4	1 = Yes 2 = No	-9 = Don't know
Unmanned aerial vehicles (drones) and photographs / video	c2_4b5	1 = Yes 2 = No	-9 = Don't know
Analog tracking devices attached to animals (tail paints, scratch cards, tags)	c2_4b6	1 = Yes 2 = No	-9 = Don't know
Digital tracking device attached to animal (wearable activity monitors, RFID heat-detection tags, calving sensors, ingestible microchips)	c2_4b7	1 = Yes 2 = No	-9 = Don't know
Other	c2_4b8	1 = Yes 2 = No	-9 = Don't know

Question: What is the herd management and monitoring method used more often in this farm? [CONDITION: Ask only if the answer is YES for more than one option among c2_4b variables]	Variable	Answer
	c2_4c	1 = Human monitoring 2 = Animal-aided monitoring 3 = Feedlots or grazing system 4 = Automated cameras and video 5 = Unmanned aerial vehicles (drones) and photographs / video 6 = Analog tracking devices attached to animals (tail paints, scratch cards, tags) 7 = Digital tracking device attached to animal (wearable activity monitors,

		RFID heat-detection tags, calving sensors, ingestible microchips) 8 = Other -9 = Don't know
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Question	Variable	Answer
For how many years this establishment has been using unmanned aerial vehicles or analog tracking devices or digital tracking devices attached to animals for herd management and monitoring? [CONDITION: ask this question only if c2_4b5=1 or c2_4b6=1 or c2_4b7=1]	c2_4d	(Number of years)

C2.5. Transport of livestock

Question	Variable	Answer
Is the transport of livestock directly done by this establishment's workers? [SKIP: If c2_5a1=1 go to question c2_5b1]	c2_5a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same enterprise? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c2_5a2=1 go to question c2_5b1]	c2_5a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another enterprise? [SKIP: Go to question D1]	c2_5a3	1 = Yes 2 = No -9 = Don't know

Question: Does this establishment use any of the following methods for transport of livestock?	Variable	Answer	
Manual transport (carried on-foot)	c2_5b1	1 = Yes 2 = No	-9 = Don't know
Non-motorized vehicles (carts, bicycles)	c2_5b2	1 = Yes 2 = No	-9 = Don't know
Motorized vehicles (motorcycles, three-wheelers, cars, buses, trucks etc.)	c2_5b3	1 = Yes 2 = No	-9 = Don't know
Specialized / climate-controlled vehicles (ventilation, heat control, nonslip floors, partitioned areas, cold-chain)	c2_5b4	1 = Yes 2 = No	-9 = Don't know
Other	c2_5b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the transport method used more often in this establishment?	Variable	Answer
	c2_5c	1 = Manual transport (carried on-foot) 2 = Non-motorized vehicles (carts, bicycles)

<p>[CONDITION: Ask only if the answer is YES for more than one option among c2_5b variables]</p>		<p>3 = Motorized vehicles (motorcycles, three-wheelers, cars, buses, trucks etc.) 4 = Specialized / climate-controlled vehicles (ventilation, heat control, nonslip floors, partitioned areas, cold-chain) 5 = Other -9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using specialized climate-controlled vehicles for transport? [CONDITION: ask this question only if c2_5b4=1]</p>	<p>c2_5d</p>	<p>(Number of years)</p>

3. Food processing (manufacturing)

C3.0 Screening questions

Question	Variable	Answer
Is this establishment regulated and inspected by a government agency related to food processing?	c3_0a1	1 = Yes 0 = No -9 = Don't know -7 = Not applicable
What is the main agency that regulates this establishment? [CONDITION: ask only if c3_0a1=1]	c3_0a2	Name of the agency

Question	Variable	Answer
Are the finished products made by this establishment shelf stable?	c3_0b1	1 = Yes 0 = No -9 = Don't know -7 = Not applicable
Are the finished products made by this establishment fresh/perishable?	c3_0b2	1 = Yes 0 = No -9 = Don't know -7 = Not applicable

C3.1 Input testing

Question	Variable	Answer
Does this establishment conduct input testing in house? [SKIP: If c3_1a1=1 go to question c3_1b1]	c3_1a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c3_1a2=1 go to question c3_1b1]	c3_1a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c3_2a1]	c3_1a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following input testing mechanisms?	Variable	Answer	
Sensory systems (e.g. visual, smell, tactile, color)	c3_1b1	1 = Yes 2 = No	-9 = Don't know
Review of supplier testing on Certificate of Analysis	c3_1b2	1 = Yes 2 = No	-9 = Don't know
Non-computer-controlled testing kits	c3_1b3	1 = Yes 2 = No	-9 = Don't know
Computer testing such as chromatography or spectroscopy	c3_1b4	1 = Yes 2 = No	-9 = Don't know
Other	c3_1b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the input testing mechanism used more often by this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c3_1b variables]	Variable c3_1c	Answer
		1 = Sensory (visual, smell, color, etc.) 2 = Review of supplier testing on Certificate of Analysis 3 = Non-computer-controlled testing kits 4 = Computer testing such as chromatography or spectroscopy 5 = Other -9 = Don't know

Question	Variable	Answer
For how many years has this establishment been using computer testing for input testing? [CONDITION: ask this question only if c3_1b4=1]	c3_1d	(Number of years)

C3.2 Mixing/blending/cooking

Question	Variable	Answer
Does this establishment process food preparation such as mixing, blending, or cooking in house? [SKIP: If c3_2a1=1 go to question c3_2b1]	c3_2a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c3_2a2=1 go to question c3_2b1]	c3_2a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c3_3a1]	c3_2a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following food preparation methods such as mixing, blending?	Variable	Answer	
Manual process	c3_2b1	1 = Yes 2 = No	-9 = Don't know
Mechanical equipment requiring human force to operate	c3_2b2	1 = Yes 2 = No	-9 = Don't know
Power equipment requiring routine human interaction	c3_2b3	1 = Yes 2 = No	-9 = Don't know
Power equipment controlled by computers or robotics, with minimal human interaction	c3_2b4	1 = Yes 2 = No	-9 = Don't know
Other	c3_2b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the mixing, blending or cooking method used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c3_2b variables]	Variable c3_2c	Answer
		1 = Manual process 2 = Mechanical equipment requiring human force to operate 3 = Power equipment requiring routine human interaction 4 = Power equipment controlled by computers or robotics, with minimal human interaction 5 = Other -9 = Don't know

Question	Variable	Answer
For how many years has this establishment been using power equipment for mixing, blending or cooking? [CONDITION: ask this question only if c3_2b3=1 or c3_2b4=1]	c3_2d	(Number of years)

C3.3 Anti-bacterial processes

Question	Variable	Answer
Does this establishment handle anti-bacterial processes in house? [SKIP: If c3_3a1=1 go to question c3_3b1]	c3_3a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1) [SKIP: If c3_3a2=1 go to question c3_3b1]	c3_3a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c3_4a1]	c3_3a3	1 = Yes 2 = No -9 = Don't know

		-7 = Not applicable
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Question: Does this establishment use any of the following anti-bacterial processes?	Variable	Answer	
Minimal-processing preservation methods	c3_3b1	1 = Yes 2 = No	-9 = Don't know
Anti-bacterial wash or soaking	c3_3b2	1 = Yes 2 = No	-9 = Don't know
Thermal Processing Technologies	c3_3b3	1 = Yes 2 = No	-9 = Don't know
Other advanced methods such as High-pressure processing (HPP) and Pulsed electric field (PEF)	c3_3b4	1 = Yes 2 = No	-9 = Don't know
Other	c3_3b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the anti-bacterial process used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c3_3b variables]	Variable c3_3c	Answer 1 = Minimal-processing preservation methods 2 = Anti-bacterial wash or soaking 3 = Thermal Processing Technologies 4 = Other advanced methods such as High-pressure processing (HPP) and Pulsed electric field (PEF) 5 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using thermal or more advanced anti-bacterial processes for anti-bacterial processes? [CONDITION: ask this question only if c3_3b3=1 or c3_3b4=1]	c3_3d	(Number of years)

C3.4 Packaging

Question	Variable	Answer
Does this establishment proceed with packaging in house? [SKIP: If c3_4a1=1 go to question c3_4b1]	c3_4a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1) [SKIP: If c3_4a2=1 go to question c3_4b1]	c3_4a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c3_5a1]	c3_4a3	1 = Yes 2 = No -9 = Don't know

		-7 = Not applicable
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Question: Does this establishment use any of the following packaging methods?	Variable	Answer	
Manual packing in bags, bottles or boxes	c3_4b1	1 = Yes 2 = No	-9 = Don't know
Human operated mechanical equipment for packaging in bags, bottles or boxes	c3_4b2	1 = Yes 2 = No	-9 = Don't know
Power equipment requiring routine human interaction	c3_4b3	1 = Yes 2 = No	-9 = Don't know
Power equipment controlled by computers or robotics, with minimal human interaction	c3_4b4	1 = Yes 2 = No	-9 = Don't know
Other	c3_4b5	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the packaging procedure used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c3_4b variables]</p>	<p>Variable c3_4c</p>	<p>Answer 1 = Manual packing in bags, bottles or boxes 2 = Human operated mechanical equipment for packaging in bags, bottles or boxes 3 = Power equipment requiring routine human interaction 4 = Power equipment controlled by computers or robotics, with minimal human interaction 5 = Other -9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using power equipment for packaging? [CONDITION: ask this question only if c3_4b3=1 or c3_4b4=1]</p>	c3_4d	(Number of years)

C3.5 Food storage

Question	Variable	Answer
<p>Does this establishment store the food in house? [SKIP: If c3_5a1=1 go to question c3_5b1]</p>	c3_5a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1) [SKIP: If c3_5a2=1 go to question c3_5b1]</p>	c3_5a2	1 = Yes 2 = No -9 = Don't know

Is this task outsourced to another firm? [SKIP: Go to question D1]	c3_5a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable
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Question: Does this establishment use any of the following food storage conditions?	Variable	Answer	
Minimal protection with some exposure to outside elements	c3_5b1	1 = Yes 2 = No	-9 = Don't know
Ambient conditions in closed building	c3_5b2	1 = Yes 2 = No	-9 = Don't know
Some climate control in secured building (e.g. partial or seasonal control)	c3_5b3	1 = Yes 2 = No	-9 = Don't know
Fully automated climate and security-controlled building	c3_5b4	1 = Yes 2 = No	-9 = Don't know
Other	c3_5b5	1 = Yes 2 = No	-9 = Don't know

Question: What are the food storage conditions more often observed in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c3_5b variables]	Variable c3_5c	Answer 1 = Minimal protection with some exposure to outside elements 2 = Ambient conditions in closed building 3 = Some climate control in secured building (e.g. partial or seasonal control) 4 = Fully automated climate and security-controlled building 5 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using climate control in secured building for food storage? [CONDITION: ask this question only if c3_5b3=1 or c3_5b4=1]	c3_5d	(Number of years)

4. Wearing apparel (manufacturing)

Question: What material does this establishment use to start production?	Variable	Answer	
Printed fabric (e.g. this establishment assembled the provided fabric)	c4_0a1	1 = Yes 2 = No	-9 = Don't know
White fabric (e.g. this establishment die the fabric)	c4_0a2	1 = Yes 2 = No	-9 = Don't know
Fabric threads (e.g. this establishment weave the fabric)	c4_0a3	1 = Yes 2 = No	-9 = Don't know
Other	c4_0a4	1 = Yes 2 = No	-9 = Don't know

Question: What garments are produced by this establishment?	Variable	Answer	
Basic: TShirt, shorts, cotton, poly, denim	c4_0b1	1 = Yes 2 = No	-9 = Don't know
Fashion: Complex cuts and stich, material mix	c4_0b2	1 = Yes 2 = No	-9 = Don't know
Sports: alternative finishes such as waterproof, reflective	c4_0b3	1 = Yes 2 = No	-9 = Don't know
Protective apparel: including padding, TPR	c4_0b4	1 = Yes 2 = No	-9 = Don't know
Other	c4_0b5	1 = Yes 2 = No	-9 = Don't know

Question: What finishes are available in this establishment?	Variable	Answer	
Silk screen	c4_0c1	1 = Yes 2 = No	-9 = Don't know
Embroidery	c4_0c2	1 = Yes 2 = No	-9 = Don't know
Washing	c4_0c3	1 = Yes 2 = No	-9 = Don't know
Waterproofing	c4_0c4	1 = Yes 2 = No	-9 = Don't know
Other	C4_0c5	1 = Yes 2 = No	-9 = Don't know

C4.1 Design

Do clients provide files for design to this establishment? [SKIP: If c4_1a1=2 go to question c4_1a3]	c4_1a1	1 = Yes 2 = No
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Question: What is the most common file provided by clients for design?	Variable c4_1a2	Answer 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 -9 = Don't know
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Question	Variable	Answer
Does this establishment do design drawing in house? [SKIP: If c4_1a3=1 go to question c4_1b1]	c4_1a3	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c4_1a4=1 go to question c4_1b1]	c4_1a4	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c4_2a1]	c4_1a5	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following design drawing processes?	Variable	Answer	
Manual design and hand drawing	c4_1b1	1 = Yes 2 = No	-9 = Don't know
Digital or semi-digital design using specialized 2D drawing software	c4_1b2	1 = Yes 2 = No	-9 = Don't know
Computer Aided Design (CAD), 3D design, virtual prototyping	c4_1b3	1 = Yes 2 = No	-9 = Don't know
Other	c4_1b4	1 = Yes 2 = No	-9 = Don't know

Question: What is the design drawing process used more often by this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c4_1b variables]	Variable c4_1c	Answer 1 = Manual design and hand drawing 2 = Digital or semi-digital design using specialized 2D drawing software 3 = Computer Aided Design (CAD), 3D design, virtual prototyping 4 = Other -9 = Don't know
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Question	Variable	Answer
For how many years this establishment has been using specialized software, 3D design, or virtual prototyping?	c4_1d	(Number of years)

[CONDITION: ask this question only if c4_1b2=1 or c4_1b3=1]

C4.2 Cutting

Question	Variable	Answer
Does this establishment handle cut process in house? [SKIP: If c4_2a1=1 go to question c4_2b1]	c4_2a1	1 = Yes 2 = No
Is this task outsourced another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c4_2a2=1 go to question c4_2b1]	c4_2a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c4_3a1]	c4_2a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following cutting methods?	Variable	Answer	
Manual cutting	c4_2b1	1 = Yes 2 = No	-9 = Don't know
Cutting machine manually operated	c4_2b2	1 = Yes 2 = No	-9 = Don't know
Semi-Automatic cutting machine (straight knife, round knife, die cutting machine)	c4_2b3	1 = Yes 2 = No	-9 = Don't know
Automatic or Computerized cutting machine (no Laser: water jet, knife, other)	c4_2b4	1 = Yes 2 = No	-9 = Don't know
Automatic/Computerized cutting machine (Laser)	c4_2b5	1 = Yes 2 = No	-9 = Don't know
Other	c4_2b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the cutting method used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c4_2b variables]	Variable	Answer
	c4_2c	1 = Manual cutting 2 = Cutting machine manually operated 3 = Semi-Automatic cutting machine (straight knife, round knife, die cutting machine) 4 = Automatic or Computerized cutting machine (no Laser: water jet, knife, other) 5 = Automatic/Computerized cutting machine (Laser) 6 = Other -9 = Don't know

Question	Variable	Answer
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For how many years has this establishment been using automatic cutting machines and lasers ? [CONDITION: ask this question only if c4_2b4=1 or c4_2b5=1]	c4_2d	(Number of years)
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C4.3 Sewing and Joining Parts

Question	Variable	Answer
Does this establishment handle sew process in house? [SKIP: If c4_3a1=1 go to question c4_3b1]	c4_3a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c3a2=1 go to question c3b1]	c4_3a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c4_4a1]	c4_3a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following sewing methods?	Variable	Answer	
Manually sewing	c4_3b1	1 = Yes 2 = No	-9 = Don't know
Machine sewing manually operated	c4_3b2	1 = Yes 2 = No	-9 = Don't know
Semi-automated sewing machines	c4_3b3	1 = Yes 2 = No	-9 = Don't know
Automated sewing machines	c4_3b4	1 = Yes 2 = No	-9 = Don't know
3D Knitting	c4_3b5	1 = Yes 2 = No	-9 = Don't know
Other	c4_3b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the sewing method used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c4_3b variables]	Variable	Answer
	c4_3c	1 = Manually sewing 2 = Machine sewing manually operated 3 = Semi-automated sewing machines 4 = Automated sewing machines 5 = 3D Knitting machines 6 = Other -9 = Don't know

Question	Variable	Answer
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For how many years has this establishment been using semi-automated sewing machines or automated sewing machines or 3D knitting? [CONDITION: ask this question only if c4_3b3=1 or c4_3b4=1 or c4_3b5=1]	c4_3d	(Number of years)
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C4.4 Finishing – Ironing

Question	Variable	Answer
Does this establishment handle finishing and ironing process in house? [SKIP: If c4_4a1=1 go to question c4_4b1]	c4_4a1	1 = Yes 2 = No
Is this task outsourced another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c4_4a2=1 go to question c4_4b1]	c4_4a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question D1]	c4_4a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following finishing and ironing methods?	Variable	Answer	
Basic manual ironing	c4_4b1	1 = Yes 2 = No	-9 = Don't know
Electric high-pressure steam iron	c4_4b2	1 = Yes 2 = No	-9 = Don't know
Tunnel finisher	c4_4b3	1 = Yes 2 = No	-9 = Don't know
Form finishing machine	c4_4b4	1 = Yes 2 = No	-9 = Don't know
High tech pressing machine	c4_4b5	1 = Yes 2 = No	-9 = Don't know
Other	c4_4b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the finishing and ironing method used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c4_4b variables]	Variable	Answer
	c4_4c	1 = Basic manual ironing 2 = Electric high-pressure steam iron 3 = Tunnel finisher 4 = Form finishing machine 5 = High tech pressing machine 6 = Other -9 = Don't know

Question	Variable	Answer
<p>For how many years has this establishment been using form finishing machines or high-tech pressing machines?</p> <p>[CONDITION: ask this question only if c4_4b3=1 or c4_4b4=1 or c4_4b5=1]</p>	<p>c4_4d</p>	<p>(Number of years)</p>

7. Retail (services)

C 7.1 Customer service

Question	Variable	Answer
Does this establishment provide customer supporting services in house (e.g. technical support, complaints, return)? [SKIP: If c7_1a1=1 go to question c7_1b1]	c7_1a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c7_1a2=1 go to question c7_1b1]	c7_1a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c7_2a1]	c7_1a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment provide any of the following customer service channels?	Variable	Answer	
At the Store	c7_1b1	1 = Yes 2 = No	-9 = Don't know
Phone call or call Help Desk	c7_1b2	1 = Yes 2 = No	-9 = Don't know
Social Media (e.g. Facebook, WhatsApp, or similar)	c7_1b3	1 = Yes 2 = No	-9 = Don't know
Online requests (using own website or specialized digital platform or App)	c7_1b4	1 = Yes 2 = No	-9 = Don't know
Chatbots (e.g. a computer program which conducts a conversation via auditory or textual methods without human interaction by the company)	c7_1b5	1 = Yes 2 = No	-9 = Don't know
Other	c7_1b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the customer service procedure used more often by this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c7_1b variables]	Variable	Answer
	c7_1c	1 = At the Store 2 = Phone call or call Help Desk 3 = Social Media (e.g. Facebook, WhatsApp, or similar) 4 = Online requests (using own website or specialized digital platform or App) 5 = Chatbots (e.g. a computer program which conducts a conversation via auditory or textual methods without human interaction by the company)

		6 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment has been servicing customers online? [CONDITION: ask this question only if c7_1b3=1 or c7_1b4=1 or c7_1b5=1]	c7_1d	(Number of years)

C 7.2 Pricing

Question	Variable	Answer
Does this establishment decide the pricing strategies in house? [SKIP: If c7_2a1=1 go to question c7_2b1]	c7_2a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c7_2a2=1 go to question c7_2b1]	c7_2a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c7_3a1]	c7_2a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following pricing strategies?	Variable	Answer	
Manual Cost	c7_2b1	1 = Yes 2 = No	-9 = Don't know
Automated markup (excel or similar)	c7_2b2	1 = Yes 2 = No	-9 = Don't know
Automated promotional (e.g. planning prices based on seasonality or other predictable events)	c7_2b3	1 = Yes 2 = No	-9 = Don't know
Dynamic pricing systems (using specific software to predict demand and adjust prices)	c7_2b4	1 = Yes 2 = No	-9 = Don't know
Personalized pricing driven by predictive analytics (e.g. data mining, machine learning)	c7_2b5	1 = Yes 2 = No	-9 = Don't know
Other	c7_2b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the pricing strategy used more often by this establishment?	Variable	Answer
	c7_2c	1 = Manual Cost 2 = Automated markup (excel or similar)

[CONDITION: Ask only if the answer is YES for more than one option among c7_2b variables]		3 = Automated promotional (e.g. planning prices based on seasonality or other predictable events) 4 = Dynamic pricing systems (using specific software to predict demand and adjust prices) 5 = Personalized pricing (e.g. data mining, machine learning) 6 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using dynamic pricing systems or personalized pricing for pricing strategies? [CONDITION: ask this question only if c7_2b4=1 or c7_2b5=1]	c7_2d	(Number of years)

Is there any significant regulation that limits price mechanism decision of this establishment?	c7_2da	1 = Yes 2 = No -9 = Don't know
What is the agency regulating the price mechanism for this establishment?	c7_2db	Name of the agency

C7.3 Merchandising

Question	Variable	Answer
Does this establishment make strategic decisions about what products are sold and how they are displayed to the costumers in house? [SKIP: If c7_3a1=1 go to question c7_3b1]	c7_3a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c7_3a2=1 go to question c7_3b1]	c7_3a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c7_4a1]	c7_3a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following merchandising strategies?	Variable	Answer	
Manually selecting products	c7_3b1	1 = Yes 2 = No	-9 = Don't know
Category Management tools (decide how many products of each category to sell)	c7_3b2	1 = Yes 2 = No	-9 = Don't know

Retail Merchandising Systems or Digital Merchandising (specialized software that takes into account the turnover, inventory, and space)	c7_3b3	1 = Yes 2 = No	-9 = Don't know
Product trend analytics (forward-looking strategies based on Big data analytics, or Machine learning)	c7_3b4	1 = Yes 2 = No	-9 = Don't know
Other	c7_3b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the merchandising strategy used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c7_3b variables]	Variable c7_3c	Answer 1 = Manually selecting products 2 = Category Management tools (decide how many products of each category to sell) 3 = Retail Merchandising Systems or Digital Merchandising (specialized software that takes into account the turnover, inventory, and space) 4 = Product trend analytics (forward-looking strategies based on Big data analytics, or Machine learning) 5 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using digital merchandising or product trend analysis for merchandising? [CONDITION: ask this question only if c7_3b3=1 or c7_3b4=1]	c7_3d	(Number of years)

C7.4 Inventory

Question	Variable	Answer
Does this establishment manage inventory in house? [SKIP: If c7_4a1=1 go to question c7_4b1]	c7_4a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c7_4a2=1 go to question c7_4b1]	c7_4a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c7_5a1]	c7_4a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following inventory methods?	Variable	Answer
Handwritten record keeping	c7_4b1	1 = Yes 2 = No -9 = Don't know

Computer databases with manual updates	c7_4b2	1 = Yes 2 = No	-9 = Don't know
Warehouse Management System with specialized software	c7_4b3	1 = Yes 2 = No	-9 = Don't know
Automated inventory control (CAO), Vendor managed inventory, and/or Radio-frequency identification	c7_4b4	1 = Yes 2 = No	-9 = Don't know
Automated Storage and Retrieval systems (AS/RS)	c7_4b5	1 = Yes 2 = No	-9 = Don't know
Other	c7_4b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the inventory method use more often by this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c7_4b variables]	Variable c7_4c	Answer 1 = Handwritten record keeping 2 = Computer databases with manual updates 3 = Warehouse Management System with specialized software 4 = Automated inventory control (CAO) or Vendor managed inventory, or Radio-frequency identification 5 = Automated Storage and Retrieval systems 6 = Other -9 = Don't know
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Question	Variable	Answer
For how many years has this establishment been using automated inventory systems for food storage? [CONDITION: ask this question only if c7_4b4 = 1 or c7_4b5=1]	c7_4d	(Number of years)

C7.5 Advertisement

Question	Variable	Answer
Does this establishment use in-house expertise to implement advertisement strategies? [SKIP: If c7_5a1=1 go to question c7_5b1]	c7_5a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c7_5a2=1 go to question c7_5b1]	c7_5a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question D1]	c7_5a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following advertisement channels?	Variable	Answer
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Paper based communication: instore signage, newspaper ads, leaflets	c7_5b1	1 = Yes 2 = No	-9 = Don't know
Radio, Billboards, TV	c7_5b2	1 = Yes 2 = No	-9 = Don't know
Email or mobile phone	c7_5b3	1 = Yes 2 = No	-9 = Don't know
Social Media (YouTube, Facebook, Twitter, Instagram) – customer cluster	c7_5b4	1 = Yes 2 = No	-9 = Don't know
Search Engine Marketing to customize advertisement	c7_5b5	1 = Yes 2 = No	-9 = Don't know
Big data Analytics or Artificial Intelligence to generate personalized advertisement	c7_5b6	1 = Yes 2 = No	-9 = Don't know
Other	c7_5b7	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the main advertisement channel and strategy used in this facility?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c7_5b variables]</p>	<p>Variable c7_5c</p>	<p>Answer</p> <p>1 = Paper based communication 2 = Radio, Billboards, TV 3 = Email or mobile phone 4 = Social Media (YouTube, Facebook, Twitter, Instagram) 5 = Search Engine Marketing 6 = Big data or Artificial Intelligence 7 = Other -9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using search engine marketing or big data (artificial intelligence) for advertisement?</p> <p>[CONDITION: ask this question only if c7_5b5=1 or c7_5b6=1]</p>	c7_5d	(Number of years)

9. Transportation (services)

Question: What are the main transportation services provide by this establishment?	Variable	Answer	
Passengers	c9_0a1	1 = Yes 2 = No	-9 = Don't know
Freight	c9_0a2	1 = Yes 2 = No	-9 = Don't know
Other	c9_0a3	1 = Yes 2 = No	-9 = Don't know

Question: What is the type of the fleet used by this establishment?	Variable	Answer	
Trucks	c9_0b1	1 = Yes 2 = No	-9 = Don't know
Cars	c9_0b2	1 = Yes 2 = No	-9 = Don't know
Motorcycle	c9_0b3	1 = Yes 2 = No	-9 = Don't know
Others	c9_0b4	1 = Yes 2 = No	-9 = Don't know

Question: What is the number of vehicles used by this establishment by type of the fleet?	Variable	Answer	
Trucks [CONDITION: Ask only if c9_0b1=1]	c9_0b5	Number	-9 = Don't know -7 Does not apply
Cars [CONDITION: Ask only if c9_0b2=1]	c9_0b6	Number	-9 = Don't know -7 Does not apply
Motorcycle [CONDITION: Ask only if c9_0b3=1]	c9_0b7	Number	-9 = Don't know -7 Does not apply

Question: What is the number of vehicles with the following features?	Variable	Answer	
Automatic transmission [CONDITION: Ask only if any of the c9_0b answers is 1]	c9_0b8	Number	-9 = Don't know -7 Does not apply
Hybrid or electric [CONDITION: Ask only if any of the c9_0b answers is 1]	c9_0b9	Number	-9 = Don't know -7 Does not apply

GPS tracking system	c9_0b10	Number	-9 = Don't know -7 Does not apply
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Question:	Variable	Answer	
Are there any regulations regarding the number of hours that drivers can drive uninterruptedly that apply for this establishment?	c9_0c1	1 = Yes 2 = No	-9 = Don't know
Are there any regulations regarding the type of vehicles allowed to be used for business purposes by this establishment?	c9_0c2	1 = Yes 2 = No	-9 = Don't know

C 9.1 Transportation Planning

Question	Variable	Answer	
Does this establishment make load optimization plans in house? [SKIP: If c9_1a1=1 go to question c9_1b1]	c9_1a1	1 = Yes 2 = No	
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c9_1a2=1 go to question c9_1b1]	c9_1a2	1 = Yes 2 = No	-9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c9_2a1]	c9_1a3	1 = Yes 2 = No	-9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following methods for transportation planning?	Variable	Answer	
Handwritten information to create load plans	c9_1b1	1 = Yes 2 = No	-9 = Don't know
Information collected by electronic file share (e.g. Email or FAX to create load plans)	c9_1b2	1 = Yes 2 = No	-9 = Don't know
Batch information collected by installed software to create ERP generated load plans	c9_1b3	1 = Yes 2 = No	-9 = Don't know
Real time information by online software interface with ERP to create load plans	c9_1b4	1 = Yes 2 = No	-9 = Don't know
Other	c9_1b5	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the transportation planning method used more often by this establishment?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c9_1b variables]</p>	<p>Variable c9_1c</p>	<p>Answer</p> <p>1 = Information collected by non-specialized workers to create load plans</p> <p>2 = Information collected by electronic file share (e.g. Email or FAX to create load plans)</p> <p>3 = Batch information collected by software installed ERP to create ERP generated load plans</p> <p>4 = Real time information by online software interface with ERP to create load plans</p> <p>5 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years this establishment has been using batch information or real time information collected by specialized software integrated with ERP to create load plans?</p> <p>[CONDITION: ask this question only if c9_1b3=1 or c9_1b4=1]</p>	c9_1d	(Number of years)

C 9.2 Transportation Plan Execution

Question	Variable	Answer
<p>Does this establishment execute transportation load plans?</p> <p>[SKIP: If c9_2a1=1 go to question c9_2b1]</p>	c9_2a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm?</p> <p>[CONDITION: Only for multi-establishment firms (s4=1)]</p> <p>[SKIP: If c9_2a2=1 go to question c9_2b1]</p>	c9_2a2	1 = Yes 2 = No -9 = Don't know
<p>Is this task outsourced to another firm?</p> <p>[SKIP: Go to question c9_3a1]</p>	c9_2a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following processes for loading tender, routing, and dispatching?	Variable	Answer	
Manual process with the support of fax, text, or phone calls	c9_2b1	1 = Yes 2 = No	-9 = Don't know
Manual process with the support of digital platforms or mobile apps	c9_2b2	1 = Yes 2 = No	-9 = Don't know
Execution plan exchanged via web based direct to delivery equipment for interface with Driver: GPS, - routing, tracking, Email, text	c9_2b3	1 = Yes 2 = No	-9 = Don't know
Specific software interface via Internet: GPS, Dynamic routing (weather ,traffic), Elog – Driver status and safety, load monitoring	c9_2b4	1 = Yes 2 = No	-9 = Don't know

File exchange between ERP integrated applications and delivery equipment	c9_2b5	1 = Yes 2 = No	-9 = Don't know
Other	c9_2b6	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the data file exchange system used more often by this establishment? [CONDITION: Ask only if the answer is YES for more than one option among c9_2b variables]</p>	Variable c9_2c	<p>Answer</p> <p>1 = Manual process with the support of fax, text, or phone calls</p> <p>2 = Manual process with the support of digital platforms or mobile apps</p> <p>3 = Execution plan exchanged via web based direct to delivery equipment for interface with Driver: GPS,- routing, tracking, Email, text</p> <p>4 = Specific software interface via Internet: GPS, Dynamic routing (weather ,traffic), Elog – Driver status and safety, load monitoring</p> <p>5 = File exchange between ERP integrated applications</p> <p>6 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using specialized software for transportation load plan execution? [CONDITION: ask this question only if c9_2b3=1 or c9_2b4=1 or c9_2b5=1]</p>	c9_2d	(Number of years)

C 9.3 Transportation Monitoring

Question	Variable	Answer
<p>Does this establishment monitor load and delivery in house? [SKIP: If c9_3a1=1 go to question c9_3b1]</p>	c9_3a1	1 = Yes 2 = No
<p>Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c9_3a2=1 go to question c9_3b1]</p>	c9_3a2	1 = Yes 2 = No -9 = Don't know
<p>Is this task outsourced to another firm? [SKIP: Go to question c9_4a1]</p>	c9_3a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following systems for monitoring load and delivery?	Variable	Answer
Performed manually at predetermined intervals with the support of fax, SMS or phone calls	c9_3b1	1 = Yes 2 = No -9 = Don't know

Performed manually at predetermined intervals with the support of digital platforms or mobile apps	c9_3b2	1 = Yes 2 = No	-9 = Don't know
Paper documentation exchange on daily, weekly or monthly intervals with data entry into ERP or planning system– invoice, bill of lading, regulatory, etc.	c9_3b3	1 = Yes 2 = No	-9 = Don't know
Information collected by software installed on the transportation equipment: GPS, E-log – Driver status, load monitoring	c9_3b4	1 = Yes 2 = No	-9 = Don't know
File exchange between ERP integrated applications and delivery equipment software application(s)	c9_3b5	1 = Yes 2 = No	-9 = Don't know
Other	c9_3b6	1 = Yes 2 = No	-9 = Don't know

<p>Question: What is the transportation monitoring system used more often by this establishment?</p> <p>[CONDITION: Ask only if the answer is YES for more than one option among c9_3b variables]</p>	<p>Variable c9_3c</p>	<p>Answer</p> <p>1 = Event driven at predetermined intervals with the support of fax, text, or phone calls</p> <p>2 = Event driven at predetermined intervals with the support of digital platforms or mobile apps</p> <p>3 = Paper documentation exchange on daily, weekly or monthly intervals with data entry into ERP or planning system– invoice, bill of lading, regulatory, etc.</p> <p>4 = Information collected by software installed on the transportation equipment: GPS, E-log – Driver status, load monitoring</p> <p>5 = File exchange between ERP integrated applications and delivery equipment software application(s)</p> <p>6 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using a system integrated into ERP, specialized software, or batch processing of electronic data exchange for monitoring transportation?</p> <p>[CONDITION: ask this question only if c9_3b3=1 or c9_3b4=1 or c9_3b5=1]</p>	c9_3d	(Number of years)

C 9.4 Transportation Performance Measurement

Question	Variable	Answer
<p>Does this establishment measure transport performance in house?</p> <p>[SKIP: If c9_4a1=1 go to question c9_4b1]</p>	c9_4a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm?	c9_4a2	1 = Yes

[CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c9_4a2=1 go to question c9_4b1]		2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question c9_5a1]	c9_4a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following transport performance measurement systems?	Variable	Answer	
Manually monitored and reported	c9_4b1	1 = Yes 2 = No	-9 = Don't know
Computer with non-specialized software such as Excel, Word, Power Point, or equivalent	c9_4b2	1 = Yes 2 = No	-9 = Don't know
Computer or apps with specialized transportation reporting applications by service and cost performance metrics	c9_4b3	1 = Yes 2 = No	-9 = Don't know
Information collected by software installed on the transportation equipment: GPS, E-log – Driver status, load monitoring	c9_4b4	1 = Yes 2 = No	-9 = Don't know
File exchange between ERP integrated applications and delivery equipment software application(s)	c9_4b5	1 = Yes 2 = No	-9 = Don't know
Other	c9_4b6	1 = Yes 2 = No	-9 = Don't know

Question: What is the transportation performance measurement system used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c9_4b variables]	Variable c9_4c	Answer 1 = Manually monitored and reported 2 = Computer with non-specialized software such as Excel, Word, Power Point, or equivalent 3 = Computer or apps with specialized transportation reporting applications by service and cost performance metrics 4 = Information collected by software installed on the transportation equipment: GPS, E-log – Driver status, load monitoring 5 = File exchange between ERP integrated applications and delivery equipment software application(s) 6 = Other -9 = Don't know
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Question	Variable	Answer
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For how many years has this establishment been using computer with specialized software or Apps or ERP integrated applications reporting performance metrics or fuel consumption? [CONDITION: ask this question only if c9_4b3=1 or c9_4b4=1 or c9_4b5=1]	c9_4d	(Number of years)
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C 9.5 Fleet Asset Management/Maintenance – Equipment/Operator

Question	Variable	Answer
Does this establishment manage fleet assets in house? [SKIP: If c9_5a1=1 go to question c9_5b1]	c9_5a1	1 = Yes 2 = No
Is this task outsourced to another unit of the same firm? [CONDITION: Only for multi-establishment firms (s4=1)] [SKIP: If c9_5a2=1 go to question c9_5b1]	c9_5a2	1 = Yes 2 = No -9 = Don't know
Is this task outsourced to another firm? [SKIP: Go to question D1]	c9_5a3	1 = Yes 2 = No -9 = Don't know -7 = Not applicable

Question: Does this establishment use any of the following fleet management systems?	Variable	Answer	
All manual paper driven system (e.g. repair, regulatory, licensing, insurance, warranty, performance, and parts management)	c9_5b1	1 = Yes 2 = No	-9 = Don't know
Information collected by electronic file and shared through Email or FAX	c9_5b2	1 = Yes 2 = No	-9 = Don't know
Batch information collected by software installed on transportation equipment – ETM (engine monitoring) for fleet management documentation and reporting	c9_5b3	1 = Yes 2 = No	-9 = Don't know
Data exchange via Web between ERP and software installed on transportation equipment – ETM, (engine monitoring) Elog and GPS (driver monitor) for fleet management documentation and reporting	c9_5b4	1 = Yes 2 = No	-9 = Don't know
Other	c9_5b5	1 = Yes 2 = No	-9 = Don't know

Question: What is the fleet management system used more often in this facility? [CONDITION: Ask only if the answer is YES for more than one option among c9_5b variables]	Variable	Answer
	c9_5c	1 = All manual paper driven system (e.g. repair, regulatory, licensing, insurance, warranty, performance, and parts management) 2 = Information collected by electronic file and shared through Email or FAX

		<p>3 = Batch information collected by software installed on transportation equipment – ETM (engine monitoring) for fleet management documentation and reporting</p> <p>4 = Data exchange via Web between ERP and software installed on transportation equipment – ETM, (engine monitoring) Elog and GPS (driver monitor) for fleet management documentation and reporting</p> <p>5 = Other</p> <p>-9 = Don't know</p>
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Question	Variable	Answer
<p>For how many years has this establishment been using batch information collected by specialized software or real-time information by on-line software interface with ERP?</p> <p>[CONDITION: ask this question only if c9_5b3=1 or c9_5b4=1]</p>	c9_5d	(Number of years)