



ICARE FOUNDATION

Food Safety Practices in the Armenian Agribusiness Sector

Evidence of Food Safety Training and Capacity Building Impact

With the support from

Caucasus Agricultural Development Initiative of the United States Department of Agriculture



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I. Introduction

According to the literature, food safety is a scientific procedure of handling, preparation and storage of food aimed at preventing food born illnesses¹. Unsafe food causes many acute and life-long diseases, constituting a growing public health problem.

Effective monitoring mechanisms from production to consumers can prevent food borne illnesses. According to the World Health Organization (WHO) the five key procedures of ensuring food hygiene are:

- Prevent contaminating food with pathogens spreading from people, pets, and pests.
- Separate raw and cooked foods to prevent contaminating the cooked foods.
- Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
- Store food at the proper temperature.
- Do use safe water and cooked materials².

Food safety is an increasingly important public health issue. Governments all over the world are intensifying their efforts to improve the food safety. These efforts are in response to an increasing number of food safety problems and rising consumer concerns. Armenia, alongside with other countries, also undertakes steps and procedures to improve the food safety situation in the country and support companies to comply with international standards and regulations. Currently, Armenian processing companies face many challenges in fulfilling the export requirements of US and EU. Adjustment of local norms and regulations with international ones and compliance with WTO requirements can be the critical determinants contributing to the success of the Armenian processing industry in abroad markets.

In order to improve the understanding of the experiences and needs of food processing firms in Armenia with respect to food safety practices and training needs, a survey was conducted by the International Center for Agribusiness Research and Education among 60 food processing companies with the support of Caucasus Agricultural Development Initiative of the USDA FAS.

Objectives of the study

The Objectives of the study were the following:

- Evaluate the effectiveness of food safety training sessions conducted in the period of 2007-2010 and assess their impact on food processing firms and operations.
- Identify current food safety practices of processing companies, review their operations and implication of food safety standards and requirements.

¹ Satin, M., Food Alert: The Ultimate Sourcebook for Food Safety, Facts on File, Inc., September 2008, 2nd ed.

² WHO | Prevention of food borne disease: Five keys to safer food. Who.int. Retrieved on 2010-12-10.

- Identify food safety training needs, desired topics of trainings and readiness of companies to pay for the relevant training.

Methodology

A face-to-face in-plant interview method was chosen to administer the survey. Out of identified 150 food processing companies a sample of 60 was randomly selected to interview. The sample selection was done according to company size, profile and involvement in CARD's training programs. Companies were divided into four groups according to the number of employees:

- Super Small: 1-4 employees,
- Small: 5-50 employees,
- Medium: 51-100 employees,
- Large: over 100 employees

As CARD had different levels of assistance and training programs, its intervention status into the operations of food processing companies was defined accordingly as:

- High intervention (continuous participation in most of CARD's seminars, on-site consultation, trainings etc),
- Low intervention (participation in some of CARD's seminars, on-site consultation, trainings etc),
- No intervention (no participation in CARD's seminars, on-site consultation, trainings etc),

Companies, participated in the survey represented different industries of food processing, including canneries, confectionaries, meat/fish/poultry, dairy and slaughterhouses. The company's profile was defined to be one of the major criteria, according to which the sample selection process was no change.

A total of 60 interviews were conducted in different regions of Armenia. The interviews were conducted with the most knowledgeable person who was in charge of food safety operations within the company. Figures and other quantitative information presented in the report have been generated exclusively from the Survey data.

Questionnaire

To get comprehensive data the questionnaire was divided into three sections:

Section A: Food Safety Program Related Information

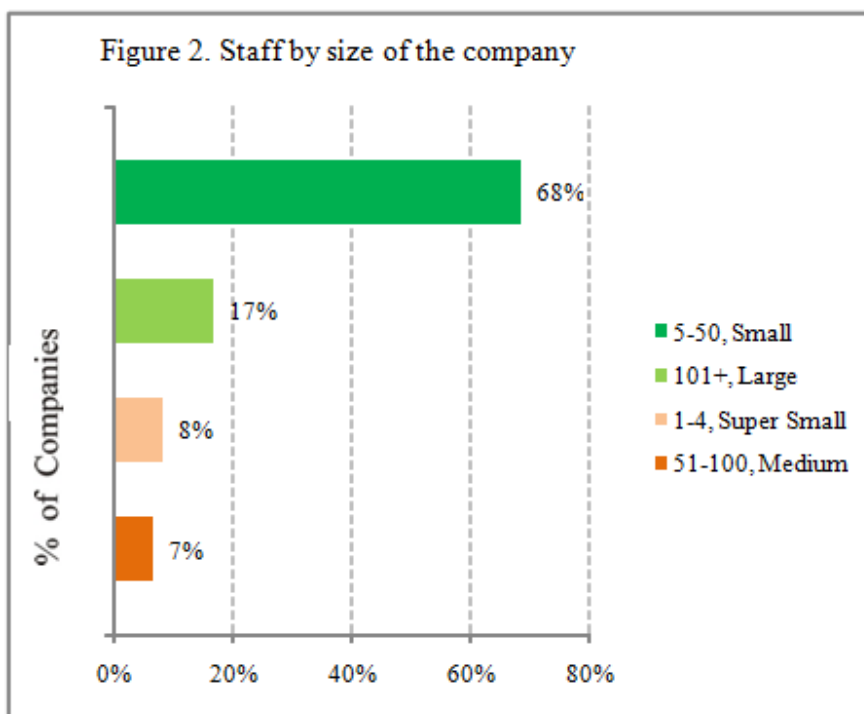
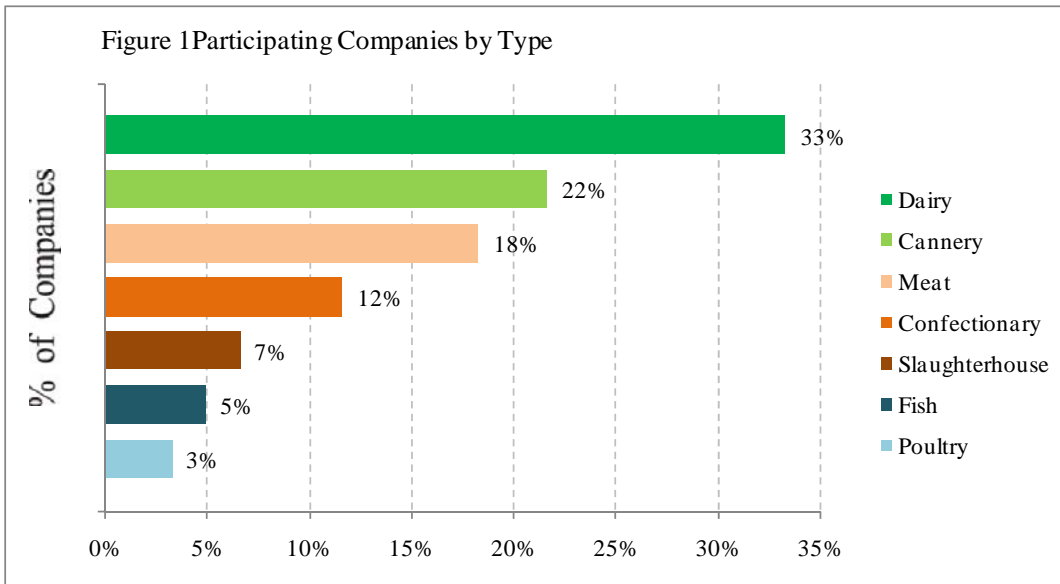
Section B: Food Processing Operations

Section C: Firm Training Needs

The complete version of questionnaire is presented in the Appendix.

Profile of companies

More than 30% of interviewed companies were from dairy sector, followed by canneries, meat sector and confectionary (See Figure 1).

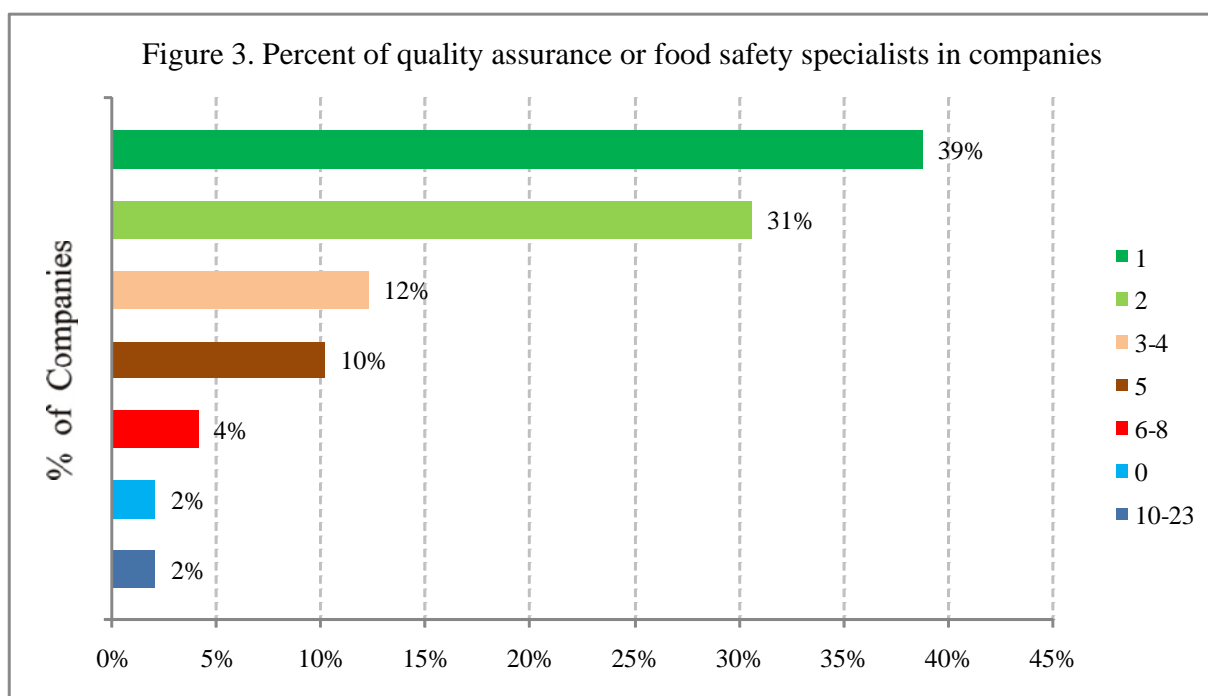


In Figure 2 the number of staff members of companies is presented. It can be observed that most of the companies had staff members ranging from 5 to 50. In addition, there were 10 companies having more than 100 employees.

II. Current State of Food Safety Standards and Practices

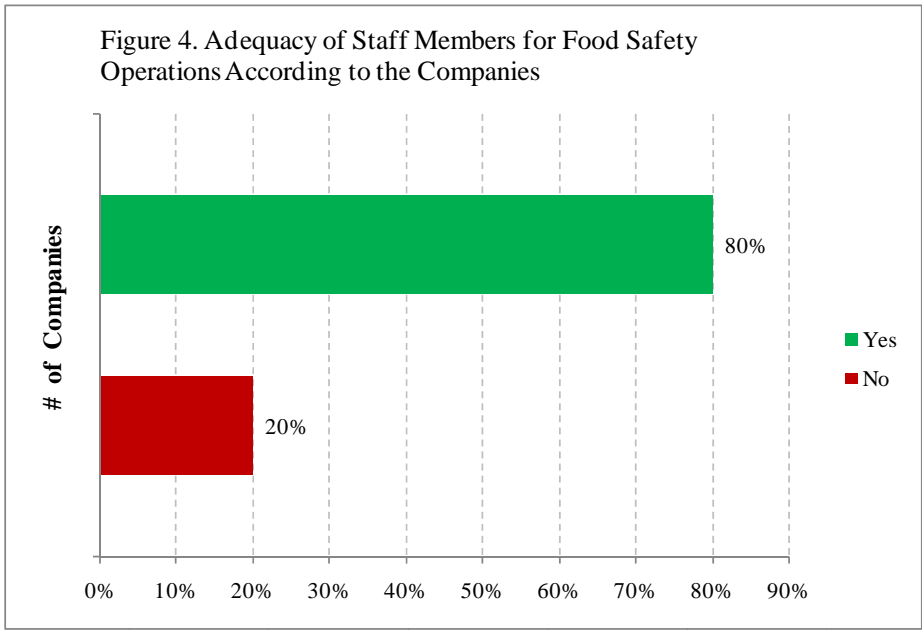
This section assesses food processing operations, standards and practices of the interviewed firms. Respondents who stated they had developed SSOPs in their companies, were asked in what areas these procedures had been developed. Also, questions were asked on whether companies were developing Hazard Analysis and Critical Control Points (HACCP) plan, Critical Control Points, etc. This section provides a concise snapshot of food safety practices in the processing companies in Armenia, providing sectoral analysis and illustrations.

Figure 3 illustrates the result of a question referring to the number of staff members assigned to work in the area of food quality assurance or food safety oversight. Most of the companies had assigned one or two employees to handle food safety or quality assurance activities. Six companies had assigned 3 and 4 employees.

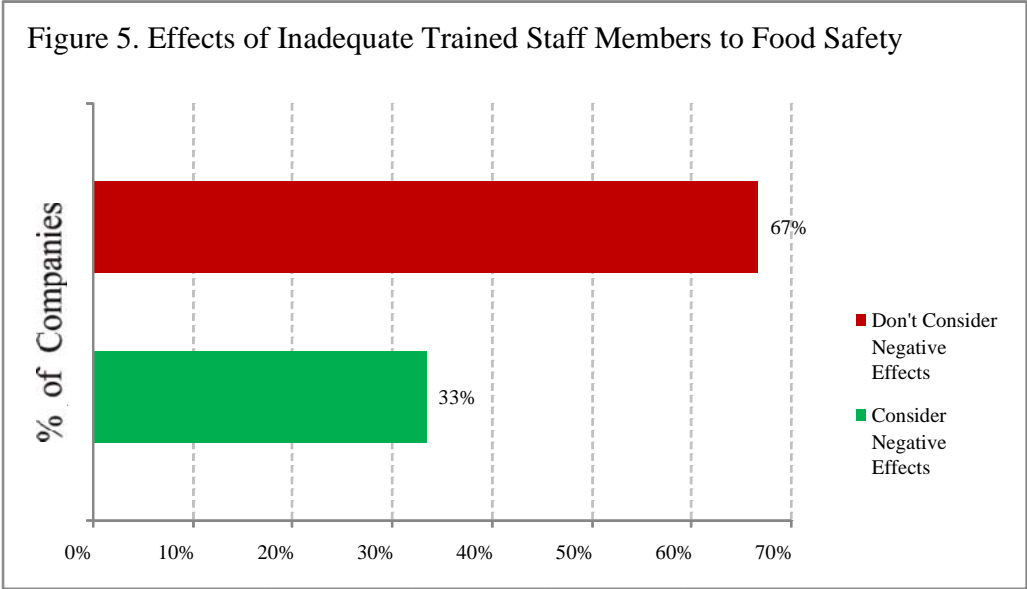


The companies with the most specialists, 17 and 23 were represented in the dairy and confectionary sectors. Only one company representing a dairy sector didn't have any employees assigned for food safety or quality assurance. Most of the specialists held university degrees.

Next, the companies were asked whether they consider the number of staff members assigned to food safety operations to be adequate. We can see in Figure 4 that the vast majority of companies consider the number of staff members to be adequate.



These companies, who indicated that the number of staff is inadequate, were asked whether they observe negative effects as a result of inadequate trained staff to food safety operations. The majority mentioned that indeed they don't consider negative effects on food safety as a result of inadequacy of appropriate staff, displayed in Figure 5.



Most of the companies, who participated in the survey, considered that their staff members always follow good food safety practices displayed in Figure 6.

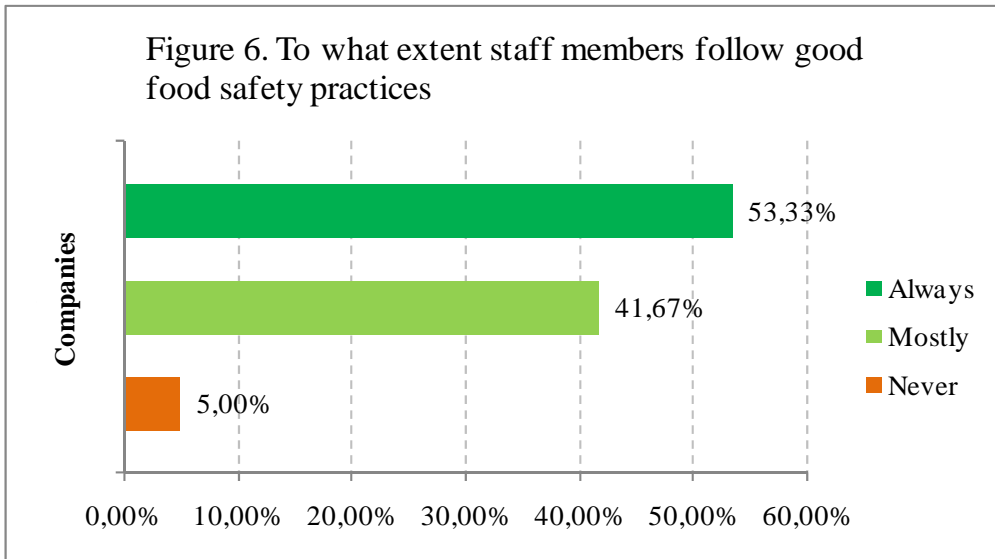
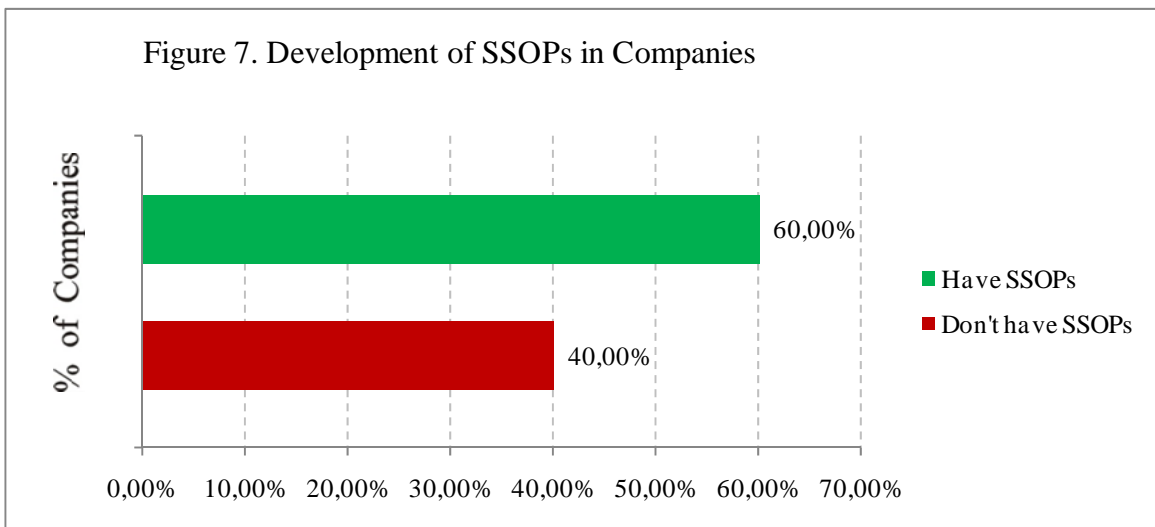
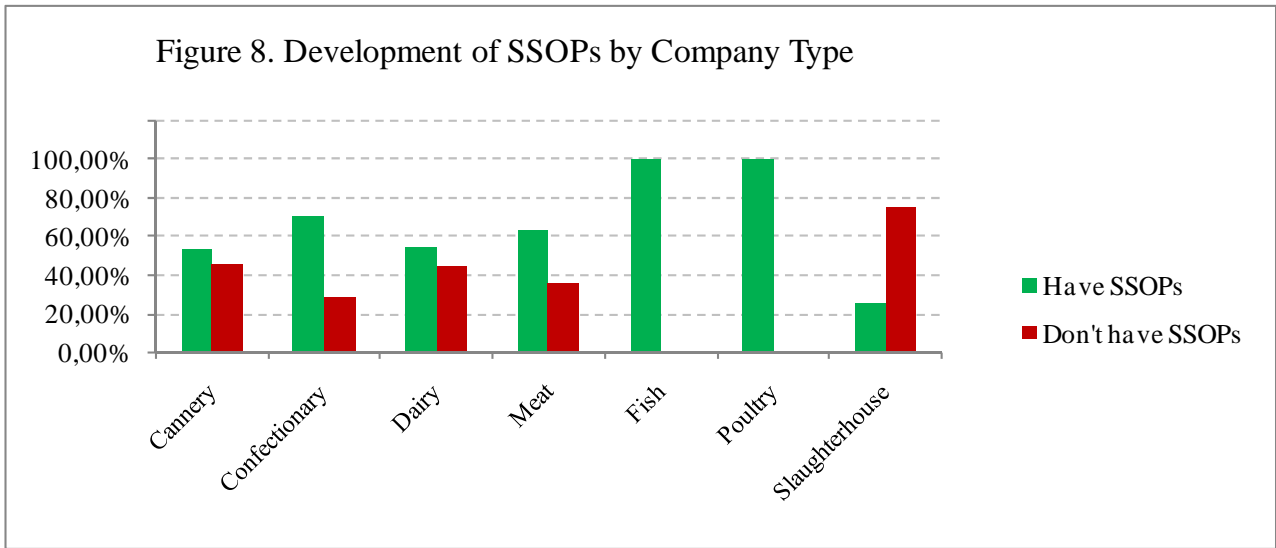


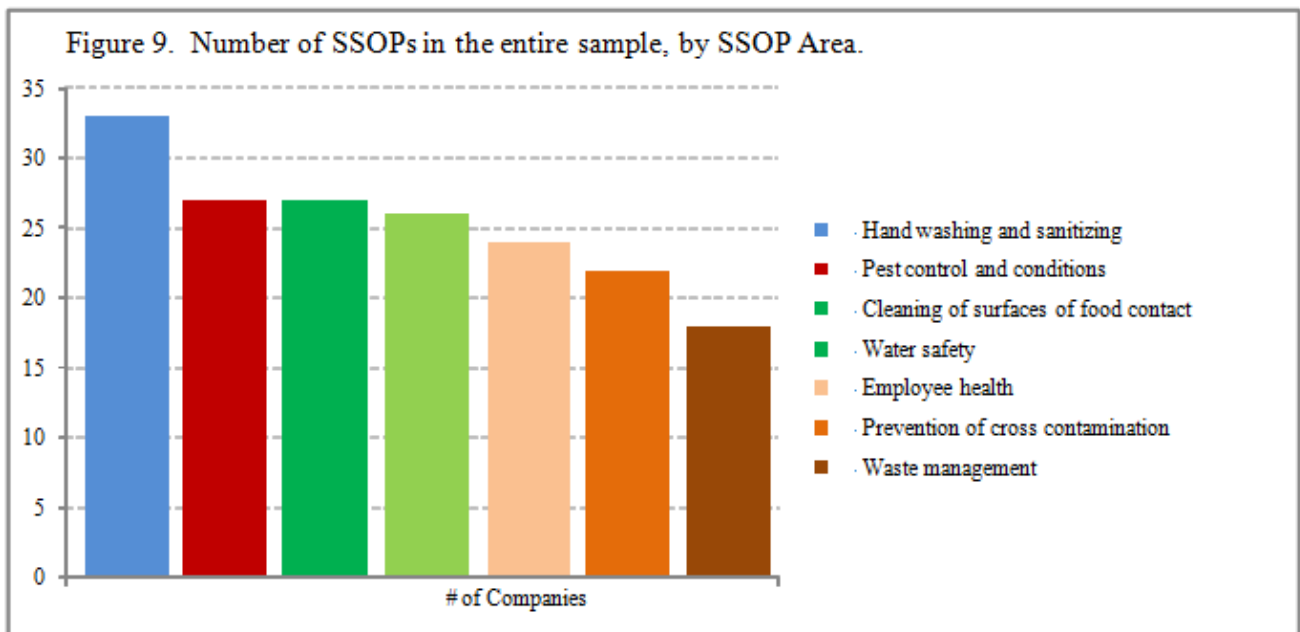
Figure 7 shows that most of the companies (60%) have developed Sanitation Standard Operating Procedures (SSOPs) in their workplaces.



When looking to the SSOP development per company type (Figure 8), we can notice that the best situation is in fish and poultry sector, where all the surveyed companies indicated that they developed SSOPs in certain areas.



Accordingly, we can see in Figure 8, that the worst situation is in the slaughterhouse sector, where about 80% of the companies didn't have SSOPs in any area.



The SSOP areas most developed by companies are shown in Figure 9. Most of the companies (36) developed SSOPs in hand washing and sanitizing, followed by pest control and conditions, and cleaning of food contact surfaces. The least frequent answer for SSOP development areas was “waste management”.

Figure 10. Initiation of HACCP plan in interviewed companies.

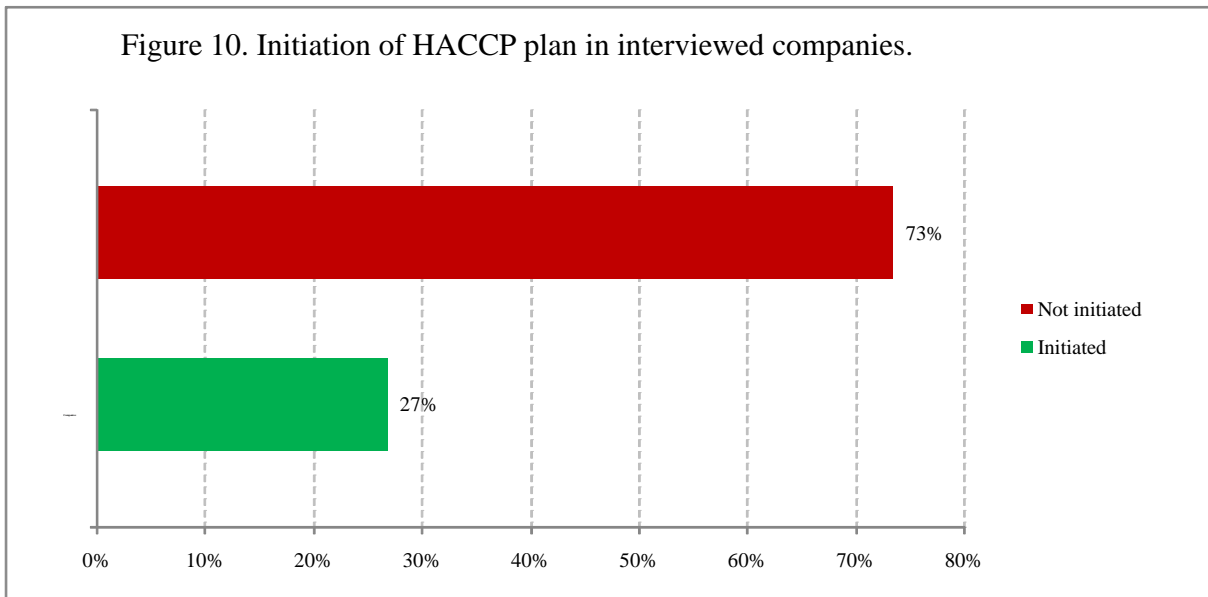
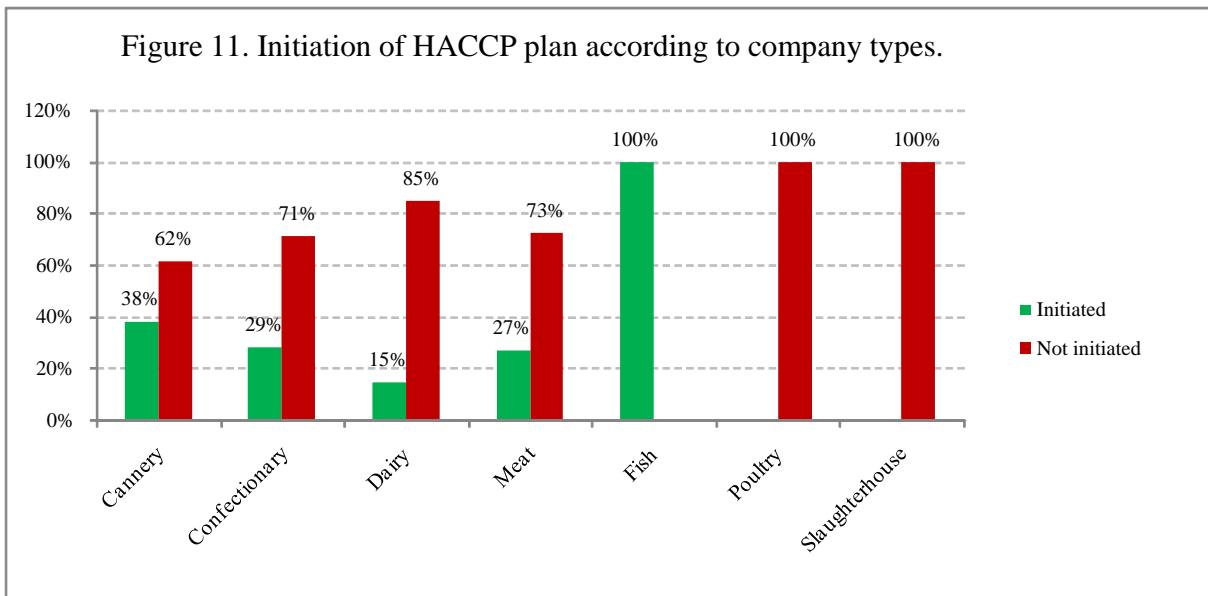


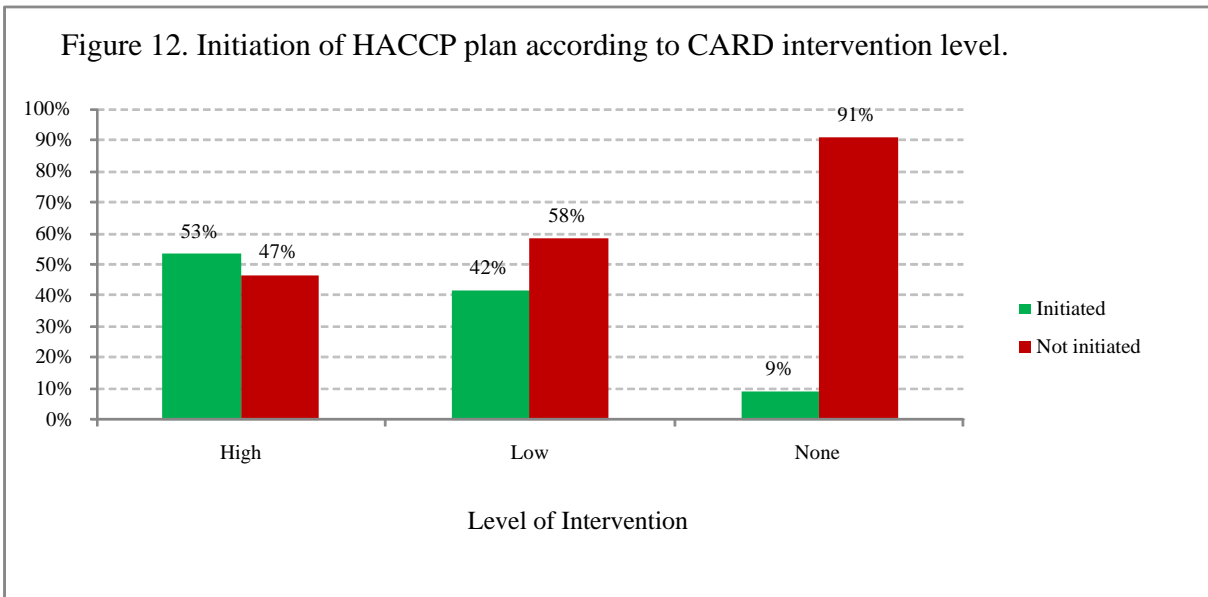
Figure 10 illustrates the development of HACCP plan in the processing sector. We can see that slightly more than a quarter of the companies indicated that they started to initiate a HACCP plan versus slightly less than 3/4 of companies which haven't initiated. It is worth noticing that those companies which indicated the development hadn't fully finished the development, but rather started the activities towards development.

Figure 11. Initiation of HACCP plan according to company types.



When looking at the HACCP development according to company type in Figure 11, it becomes clear that fisheries are in best situation, in contrast with poultry and slaughterhouse sectors haven't started the HACCP development at all. From other sectors, canneries have the biggest share of development, where about 40% indicated that they have started the HACCP plan development activities (see Figure 11).

One of the sample development criteria was the CARD’s involvement in assistance and support of companies, which was categorized as high-intervention, low-intervention and no-intervention. Thus, when we are looking at the HACCP plan implementation data according to the CARD’s intervention level, it becomes clear that in those companies where CARD had a high degree of intervention the HACCP plan development activities were higher (see Figure 12).



For those who initiated HACCP plan the most important hazards identified are displayed in Figure 12.1. Only 2 companies have identified all of the hazards according to the conducted survey.

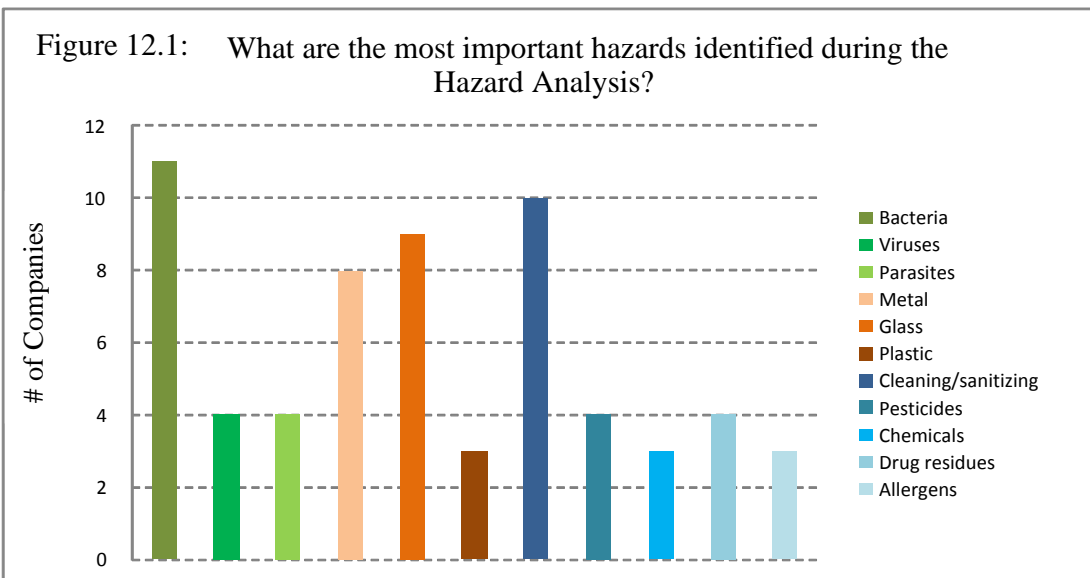
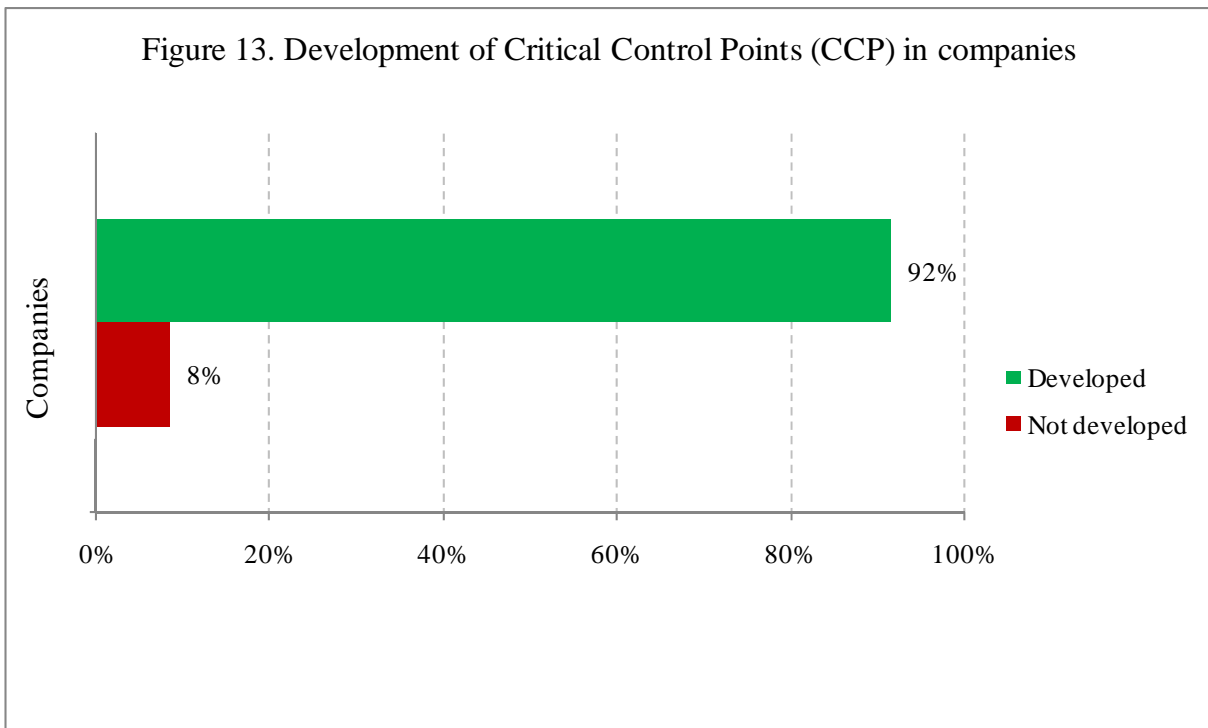
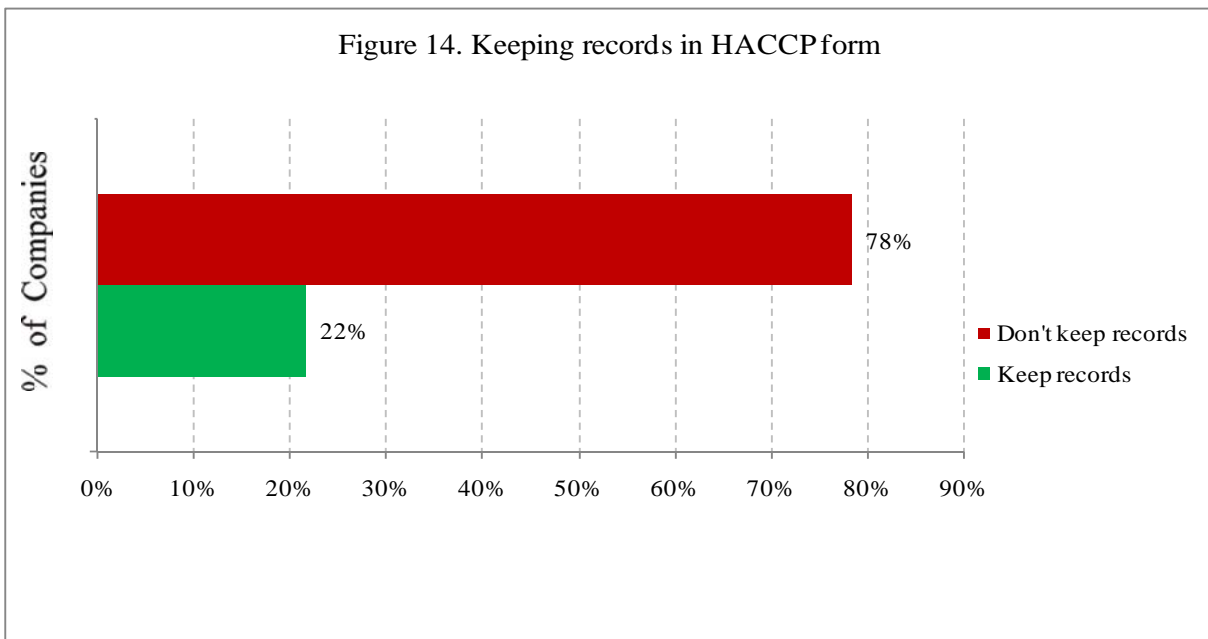


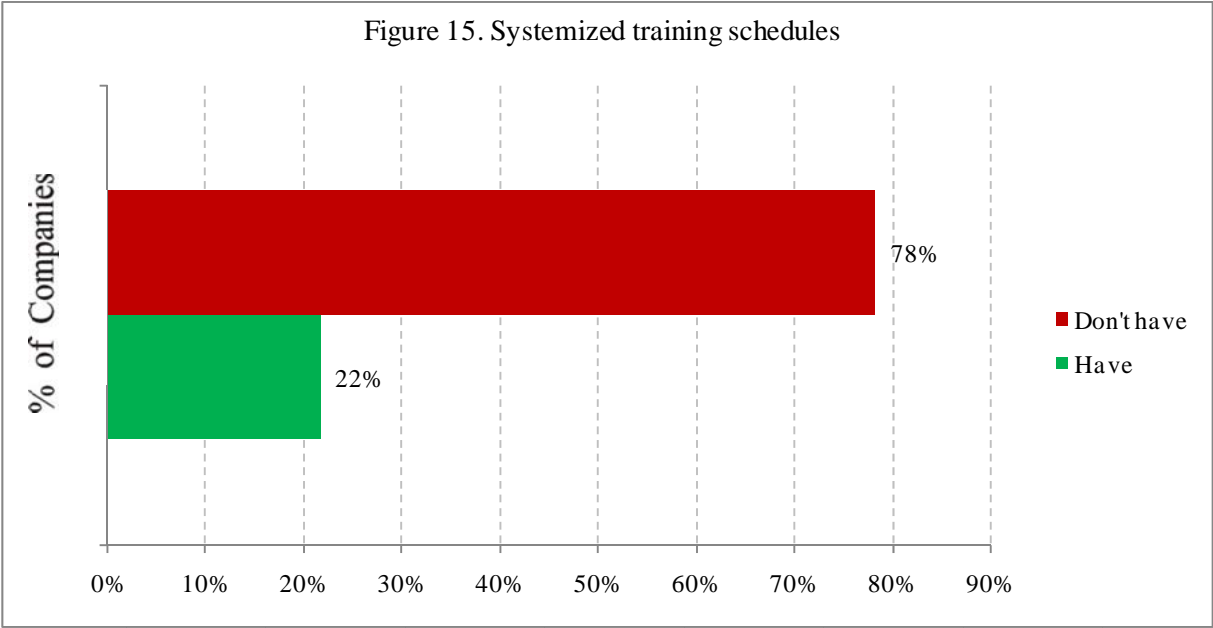
Figure 13 shows that the vast majority of the interviewed companies had developed Critical Control Points (CCPs) in their operational activities and conducted monitoring activities of the CCPs.



Most of the companies didn't maintain records in the HACCP form and didn't have systemized training schedules for their employees, except perhaps those who initiated the HACCP plan (see Figures 14).



About 78% of the surveyed companies didn't have systemized training schedules. Only 22% had systemized training schedules.



III. Impact Evaluation of Food Safety Training and Capacity Building Programs

This section evaluates the impact of food safety related programs in the period of 2007-2010 and reveals the need for further trainings. Questions were asked to collect information about the number of quality assurance or food safety specialists in the company, the academic qualifications of the two highest trained specialists, whether the company staff received training or consultaion in the period of 2007-2010, and how many employees participated in the trainings.

The next section covers:

- topics of received trainings,
- information about provider,
- duration of the training,
- number of employees who participated in the training.

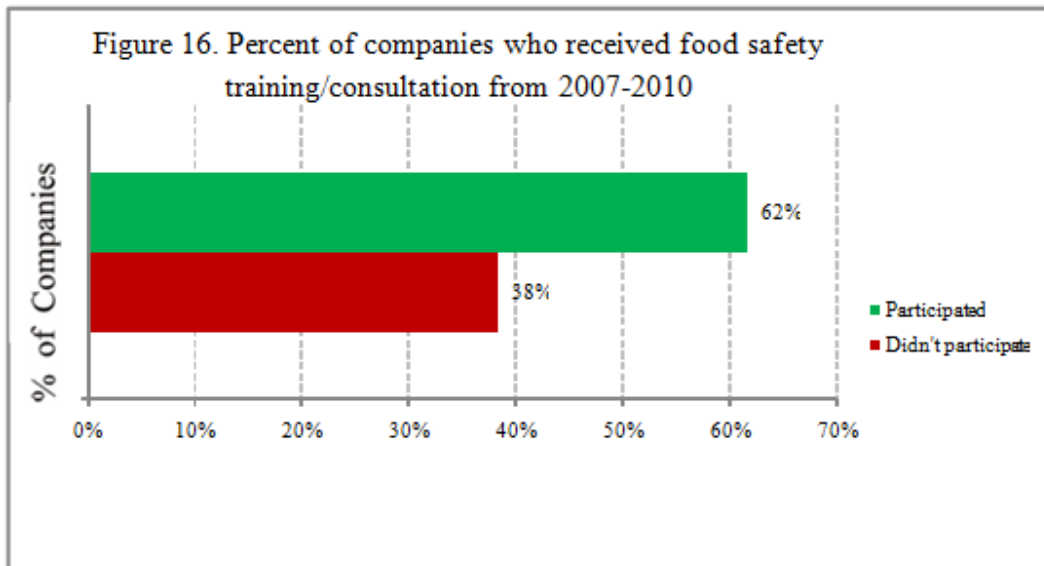
The respondent was asked to evaluate the impact of the training and whether their knowledge was enhanced as a result of that training through the use of a Likert scale³. Then, the respondent was asked to evaluate with another Likert scale⁴ whether changes were made in the company. Afterwards the respondent was asked to evaluate the degree of further training needs using the previously referenced likert scale options.

The last two questions were asked to what extent the respondent believes that the indicated areas in their company were improved. The respondent was asked to evaluate the extent of benefit of each training on the indicated areas, such as the handling of materials, processing equipment, processing methods etc. A question on the perceived benefits within the company's operations as a result of each received training followed.

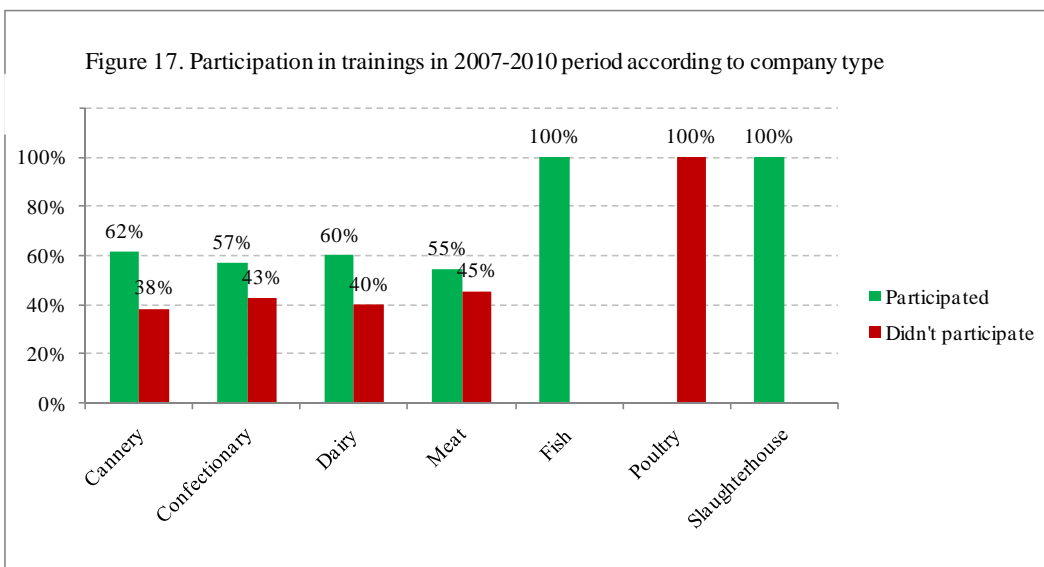
Figure 16 shows proportion of companies which received food safety trainings in the period of 2007-2010. About 62% of the surveyed companies indicated that they received either training or consultation related to food safety.

³ 1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5- Strongly Agree

⁴ 1-None 2- Not Much 3- Some 4- A Lot 5- Substantial



In total the number of employees who received trainings was 131, out of which 99 were still working at the companies at the time of the interview.

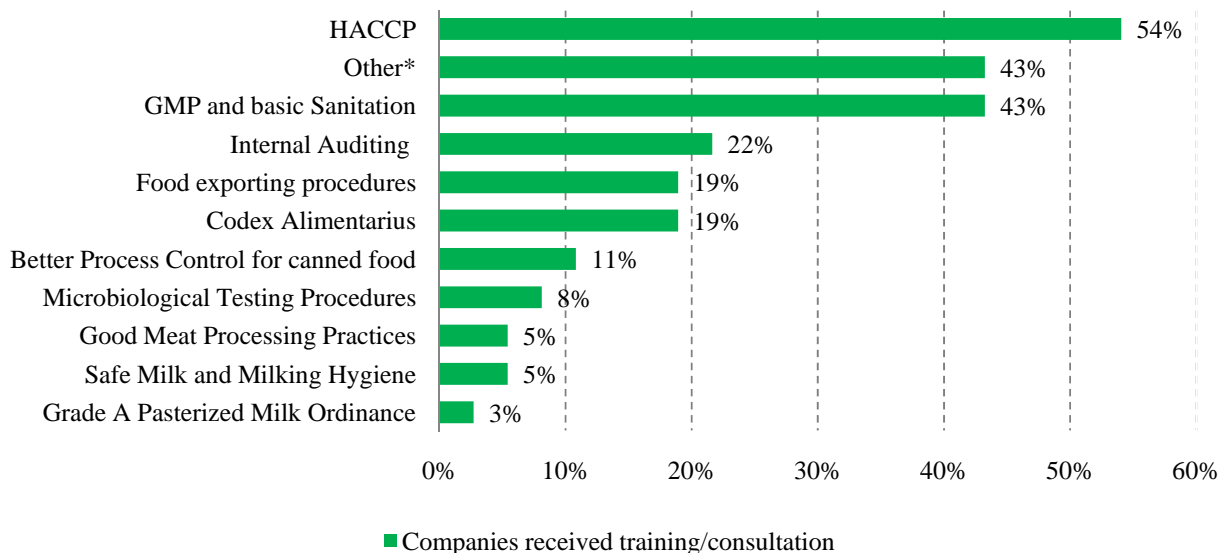


In Figure 17 we can observe the percentage of companies who participated in trainings according to their type.

All surveyed companies in the Fish and Slaughterhouse sector received either food safety training or consultation. There was no poultry company receiving any food safety related training or consultation (see Figure 17).

About 54% of total participant companies received training on HACCP (Figure 18), followed by GMP and Basic Sanitation. High number of companies received other types of training not indicated in our list. The next most common training topics were Internal Auditing, Microbiological Testing Procedure, Food Exporting Procedures and Codex Alimentarius.

Figure 18: Topics of received trainings by companies



*Other trainings provided to companies included:

- Risk analysis as a tool for science-based food safety planning and control
- Food safety in general
- Introduction to 3M
- Quality control
- Risk Analysis
- Master of cheesemaking
- Fruit refrigeration
- HACCP of work sanitation
- ISO procedures
- Fruit Processing Hygiene
- Production procedures
- Meat Processing, etc.

Table 1 illustrates the list of organizations who conducted trainings on specific topics and the number of employees who participated in those trainings. For example, GMP and basic sanitation training was provided by three organizations: CARD, Tetrapak and National Standard Institute. The highest number participants received training through CARD; 19 employees from the interviewed companies participated in the GMP and Basic Sanitation training. Ten employees participated in the training provided by Tetrapak and 1 person participated in the same training organized by the National Standard Institute. We can observe very high participation in HACCP training provided by CARD; 55 employees.

Table 1: Training topics and providers and number of participants.

Topic	Provider	# of Participant Employees
GMP and basic Sanitation	CARD	19
	Tetrapak	10
	National Standard Institute	1
HACCP	CARD	55
	Tetrapak	10
	State Body	1
Codex Alimentarius	CARD	13
	ASAU	1
Internal Auditing	CARD	8
Food Exporting Procedures	CARD	12
	Small and Medium Business Development Fund	1
	CSP	1
Better Process Control for Canned Food	CARD	9
Grade A Pasteurized Milk Ordinance	CARD	1
Safe Milk and Milking Hygiene	CARD	2
Good Meat Processing Practices	CARD	1
	Pakovic AG	1
Microbiological Testing Procedures	CARD	2
	Tetrapak	2
	European Hygienic Engineering Design Group	1

Source: Survey.

Other training providers mentioned by participants (note: names of the providers might be wrong, we documented exactly according to the response):

- University of Michigan
- Development Alternatives Incorporation (DAI)
- University of Uglich
- Challenges of the Century
- Dried Fruit Association
- Saint Petersburg Beer and Juice Association
- Ministry of Emergency.

Table 2 demonstrates the respondent's evaluation of their training providers. The first column shows the provider, and in consecutive columns the evaluation of respondents are presented according to the training provider. Respondents were asked whether their knowledge was increased as a result of participation in the particular training, and were asked to evaluate it using the above mentioned scale:

Table 2: Training Evaluation.

Provider	Knowledge increased*	Changes were made**	Need for further training**
CARD	4,3	3,9	3,9
ASAU	4	4	4
CSP	5	4	1
European Hygienic Engineering Design Group	4	3	5
Pakovic AG	1	1	1
Small and Medium Business Development Fund	4	1	3
National Standard Institute	2	1	5
Tetrapak	4,7	4,3	5,0

Source: Survey.

**1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5- Strongly Agree*

***1-None 2- Not Much 3- Some 4- A Lot 5- Substantial*

For example CARD's trainings were rated 4.3 out of 5 in terms of whether their knowledge increased or not. The respondents were asked to evaluate whether changes were made in the company or not using another scale. For example, whether changes were made in companies as a result of CARD's trainings or consultations, the respondents evaluations resulted in an average 3,9 out of 5. Thus, the need for further trainings provided by CARD rated by respondents is averaged to 3.9.

Table 3 shows the average impact of each training on the specific operational activities of a company. Thus we can observe how GMP and Basic Sanitation training affected the company's raw materials, processing equipment, processing methods, packaging, cold storage, distribution and employee hygiene. It can be seen that GMP and basic sanitation training had the highest impact on employee hygiene within the firm. Most of the trainings had at least some benefits on the overall operational activities of the firm. The trainings had different impacts on various operational activities of companies. For example, the HACCP training had greater impact on employees' hygiene and on raw materials handling than on distributional activities of a firm. From the table it can be observed that most of the trainings provided substantial benefits to at least one operational unit of the companies. Respondents were asked to what extent trainings had improved the following areas within the company. The extent of benefit of trainings was evaluated using the following 4-point Likert scale:

- 1 = No Benefits
- 2 = Some Benefits
- 3 = Substantial Benefits
- 4 = Completely Changed Firm's Procedures

Table 3: Training Topics and the Extent of Improvement, by Operational Activity.

Training topic	Raw materials	Processing equipment	Processing methods	Packaging	Cold storage	Distribution	Employee hygiene
GMP and Basic Sanitation	2,6	2,3	2,7	2,4	2,6	1,7	3,2
HACCP	2,9	2,2	2,4	2,3	2,6	1,6	3,0
Codex Alimentarius	2,3	2,1	2,0	2,6	2,6	1,9	2,6
Internal Auditing	2,5	2,4	2,3	2,4	2,7	1,6	2,5
Food Exporting Procedures	2,4	2,1	2,3	2,4	2,8	2,4	2,6
Better Process Control School for canned food	2,5	2,0	3,3	2,8	2,3	2,0	2,7
Grade A Pasteurized Milk Ordinance	3,0	3,0	3,0	0,0	3,0	0,0	2,0
Safe Milk and Milking Hygiene	2,5	2,0	2,5	1,0	2,0	1,0	2,0
Good Meat Processing Practices	2,0	3,5	3,5	2,0	2,5	3,0	2,0
Microbiological testing procedures	3,0	3,0	2,7	2,7	3,0	2,7	3,3
Other	2,9	2,4	2,4	2,5	2,6	1,9	2,7

Source: Survey.

Meanwhile it is worthwhile to note that on average none of the trainings had completely changed companies' activities in any of the mentioned areas of operations.

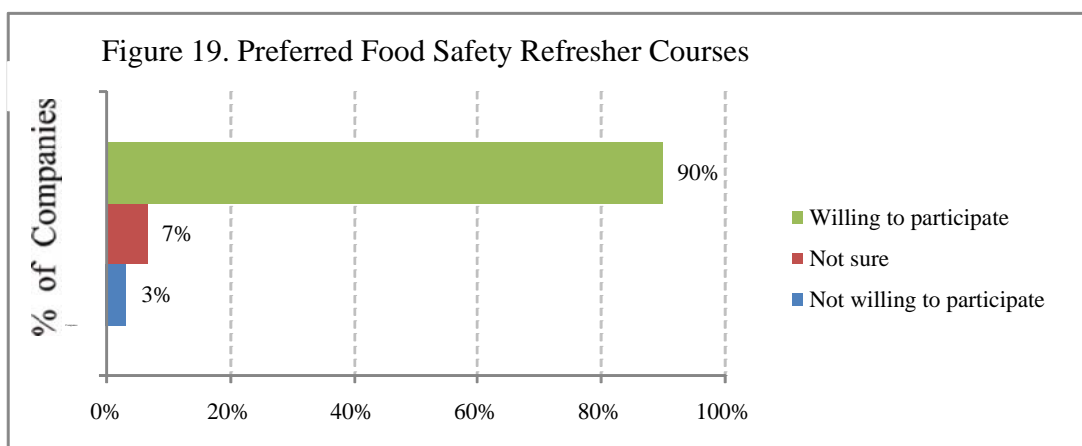
The perceived benefits of companies from the same trainings are evaluated by the respondents and are presented as averages in Table 4. GMP and basic sanitation, as well as HACCP trainings provided the companies with substantial benefits in the fields of safer working conditions and fewer products recalls. Grade A Pasteurized Milk Ordinance training has recorded one of the highest impacts, however, it should be noted that only one company indicated its participation in the mentioned training, so the results are based on that single respondent's answers.

Table 4: Training Topics and Perceived Benefits.

Training topic	Better worker health	Safer working conditions	Fewer safety violations	Less product recalls	Improved profitability
GMP and basic Sanitation	1,9	3,1	1,9	3,1	1,9
HACCP	1,8	3,0	1,8	3,1	2,0
Codex Alimentarius	1,7	2,7	1,3	3,1	2,0
Internal Auditing	1,5	2,5	1,5	3,1	2,3
Food Exporting Procedures	2,1	2,5	1,8	2,7	1,8
Better Process Control School for canned food	1,5	3,0	1,5	3,3	1,3
Grade A Pasteurized Milk Ordinance	3,0	3,0	3,0	3,0	3,0
Safe Milk and Milking Hygiene	1,5	2,5	1,5	3,0	1,0
Good Meat Processing Practices	2,0	1,5	1,0	2,5	1,0
Microbiological testing procedures	2,0	2,3	2,0	2,3	2,7
Other	1,7	2,3	1,7	2,4	1,4

Source: Survey.

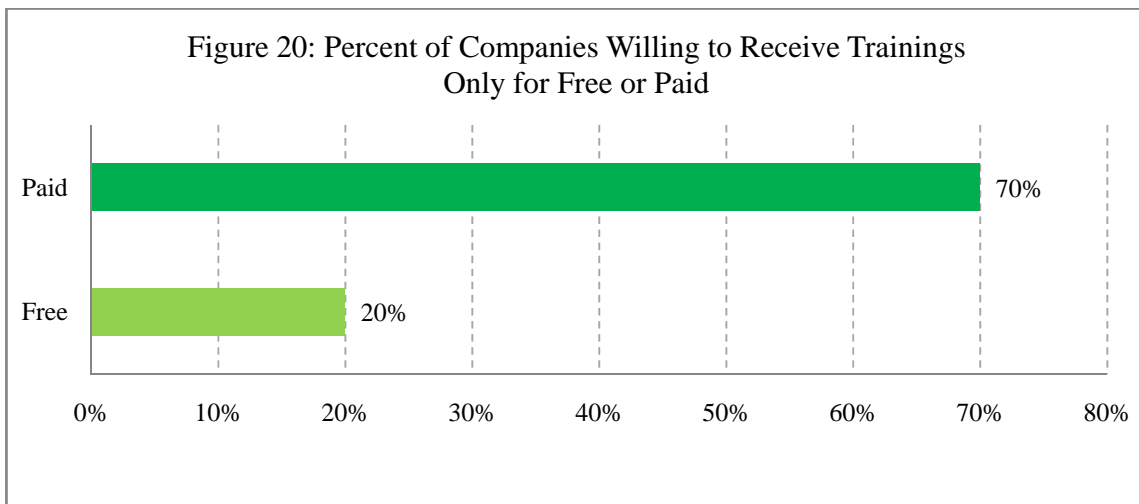
Afterwards the respondents were asked whether they or their staff members would like to take refresher food safety short courses to keep up to date on new developments in food safety. From the results illustrated in Figure 19 we can observe that the vast majority of companies are eager to take food safety refreshing courses.



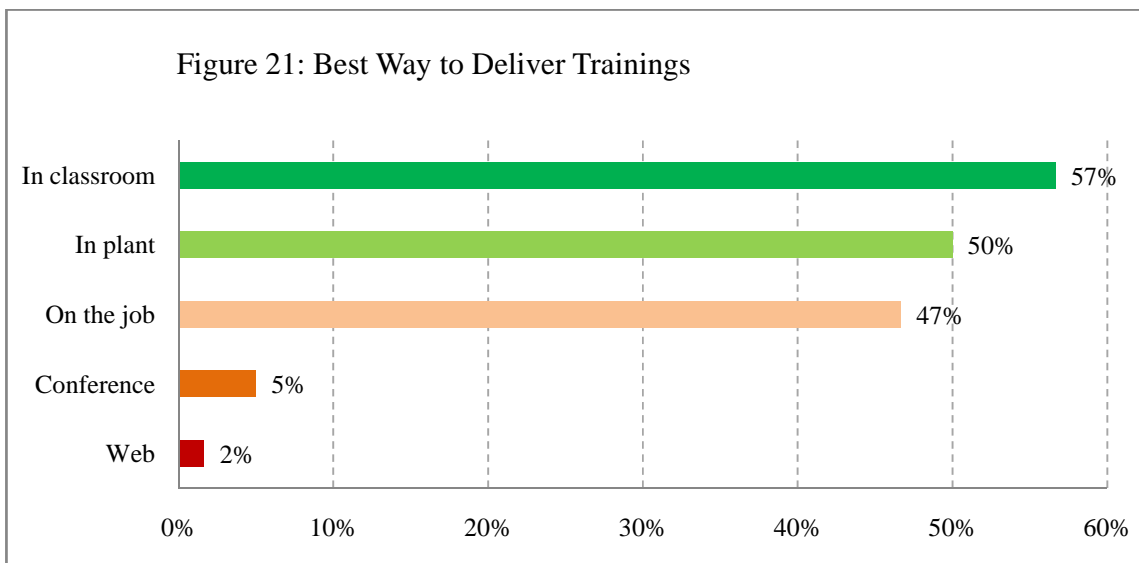
Main topics on which the companies are willing to participate in trainings are summarized below:

- **Food safety in general**
- **HACCP**
- **Sanitary and hygiene**
- **Bacteriology**
- **Laboratory analysis**
- **Meat processing practices**
- **New food safety management technologies**

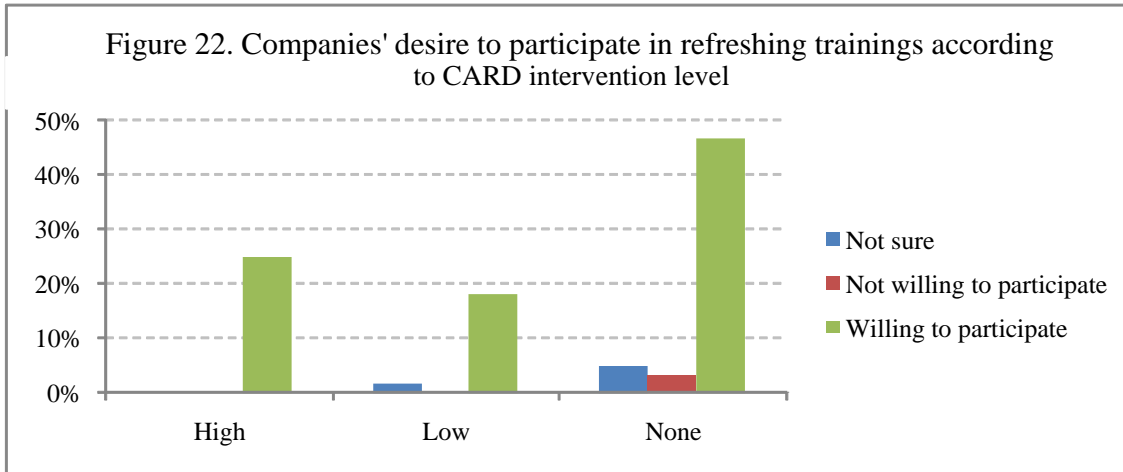
Figure 20 presents the percent of companies which are willing to take training courses only for free versus the ones which are ready to pay for the desired training. Thus, we can observe that from those companies which are willing to receive trainings, the majority are ready to pay for the appropriate training.



A total of 20% of companies choose the trainings to be delivered for free and 70% on a paid basis.



The best way to deliver the training, shown in Figure 21, resulted in an in-classroom method, followed by in plant and on the job methods. Respondents could check all training delivery methods and most often were willing to combine several methods to enhance the effectiveness of each training.



When we look at the companies' desire to participate in further refresher trainings according to CARD's intervention level, in Figure 22 we can notice that in those companies where CARD has high level of intervention, all of the companies are willing to participate in trainings. Several companies mentioned that they were not sure whether they would like to participate in trainings.

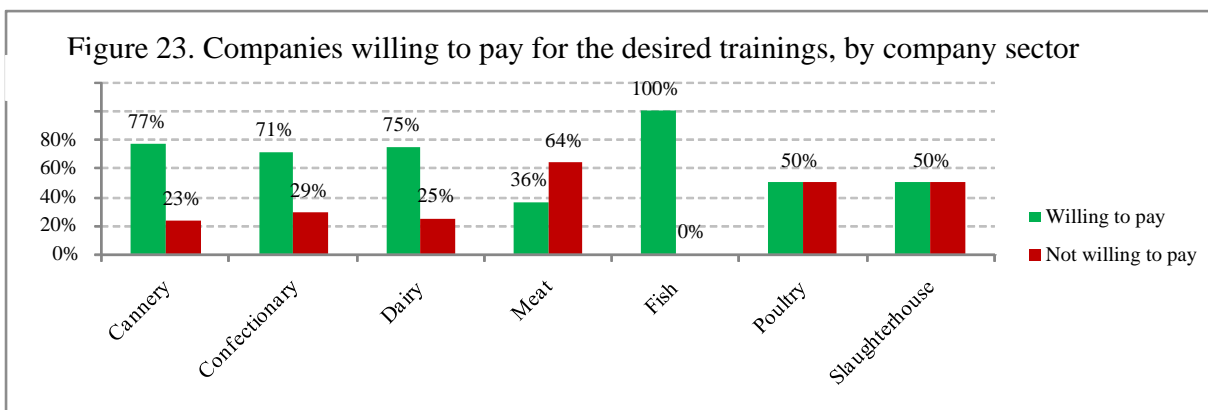
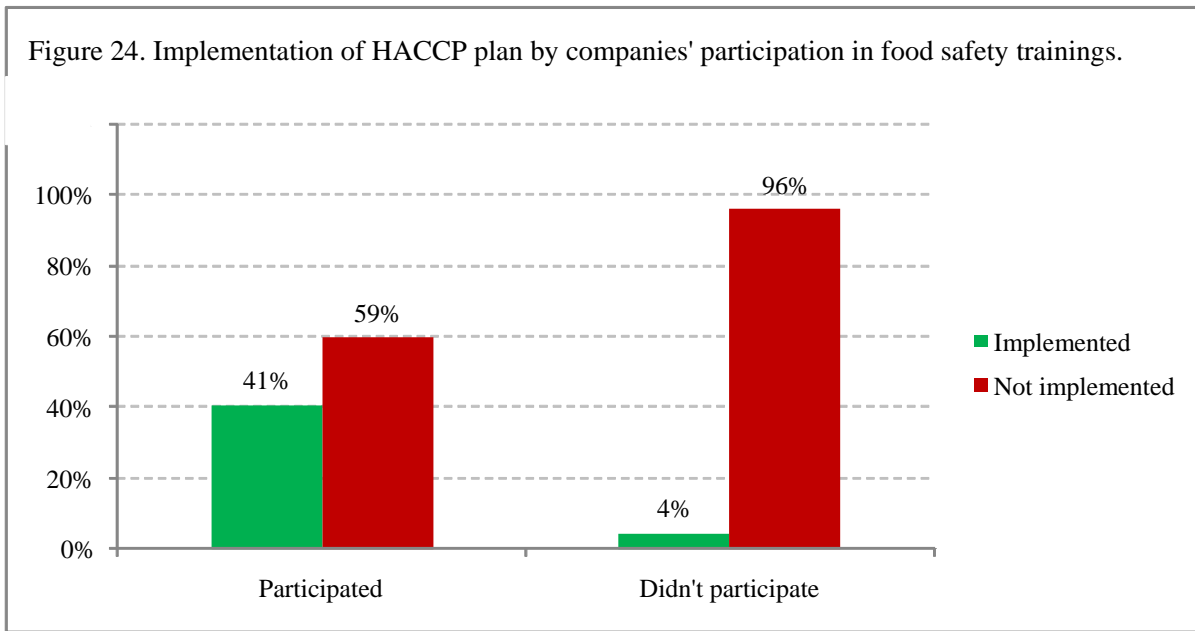


Figure 23 illustrates companies' willingness to pay for the specified training according to the type of the company. It can be observed that the companies which are willing to pay for the selected trainings are fish, canneries, dairy and confectionary sectors. Only 50% of the poultry and slaughterhouse sectors are willing to pay, in contrast with the meat sector, where most of the companies are not willing to pay for the selected trainings.

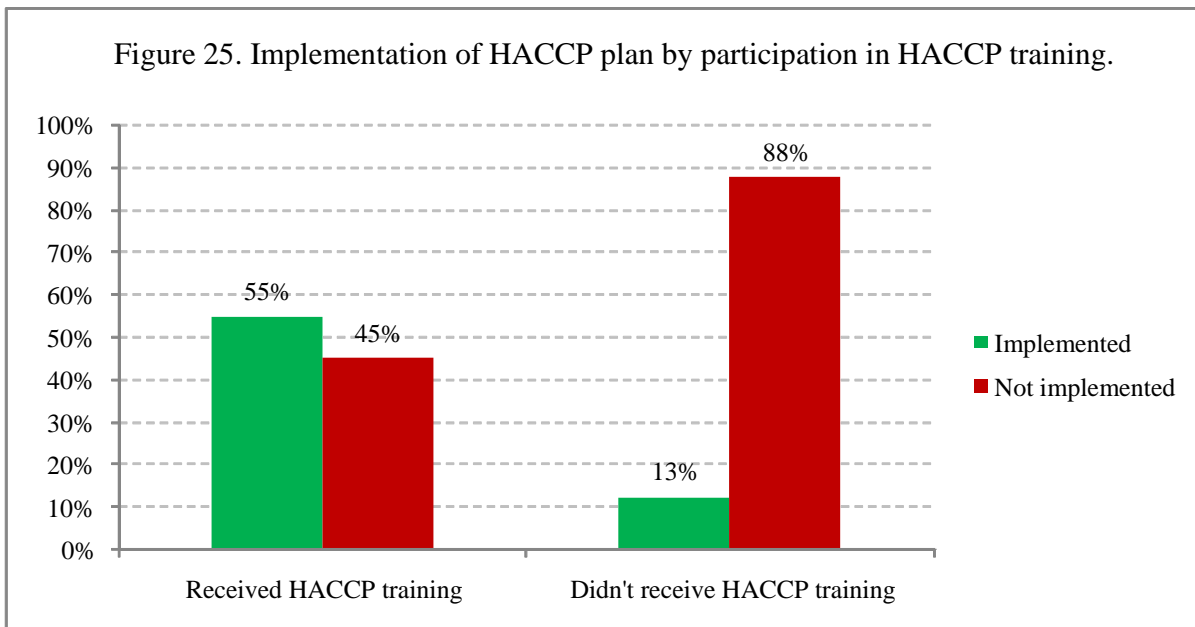
Figure 24. Implementation of HACCP plan by companies' participation in food safety trainings.

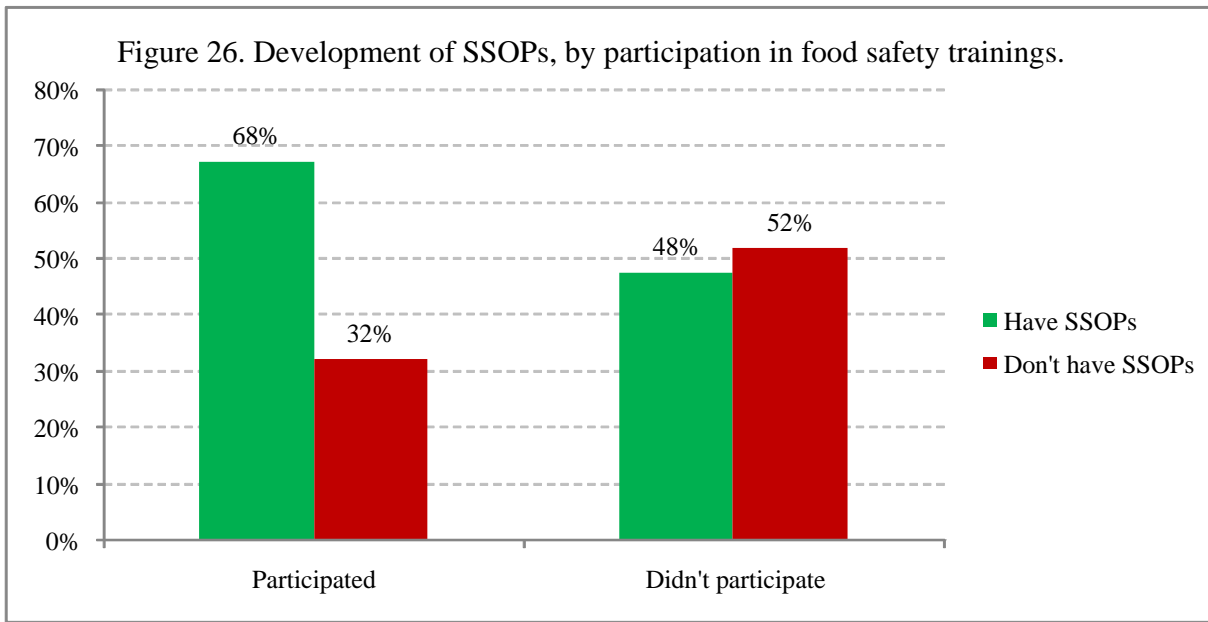


In Figure 24 we can see, that 41% of those companies who participated in Food Safety trainings started the implementation of HACCP plan in their companies. Accordingly, from the ones who didn't participate in the trainings, less than 5% started to implement HACCP plan in their firms.

More specifically, most of the companies who participated in HACCP trainings started the implementation of the HACCP plan (see Figure 25).

Figure 25. Implementation of HACCP plan by participation in HACCP training.





Similarly, Figure 26 illustrates the development of SSOPs according to their participation in food safety trainings. We can observe that most of companies who took part in the training started the development of SSOPs.

IV. Conclusions

Summarizing the food processing operational activities of Armenian agribusiness sector, we can see that currently Armenian companies face many challenges in complying with food safety standards and good manufacturing practices. Only 60% of the surveyed companies have SSOPs and only about 28% of the surveyed companies started the development of HACCP plan in their firms. However, we have to point out fisheries as a leading sector in complying with food safety standards and practices, where all of the companies surveyed had SSOPs and initiated the development of HACCP plan. Considering the fact that fisheries comprised only 5% of the sample, there might be some limitations for generalizing the results over the whole sector, but again, it should be admitted that not only the companies were following food safety practices, but also were willing to participate in trainings and pay for them. Reasons for this could be that most of the fisheries are exporting their products and have to comply with international standards and required practices.

When evaluating the reports of the trainings conducted in the period of 2007-2010, we noticed that there were both effective and not effective trainings. In general most of the trainings, according to the companies' evaluation, contributed to one specific benefit to the firm. Although, on average, there were no reports of training which would completely change the company's operational practices in the field, we can see that those companies which participated in trainings are better situated to develop SSOPs and HACCP plans. Moreover, we can see that most of those companies which participated specifically in HACCP training have started the implementation of the plan. We should admit that there were companies who underlined the importance of HACCP plan development, however, mentioning that it was too expensive for them to implement.

The assessment of companies' needs in the sphere of food safety trainings showed that 90% of companies surveyed are willing and eager to receive food safety related training or consultation. Interestingly, 70% of those who were willing to participate in trainings were willing to pay for the selected trainings, which speak about the increasing importance of food safety topics in the firms. Topics, chosen by the respondents, were about food safety in general, HACCP, Hygiene and sanitary etc. The best way to deliver trainings was chosen as an in-classroom method, in combination with on site and on-the-job methods.

V. Appendix: Processor Survey Form

A Survey of Armenian Food Processing Companies Implemented by the Agribusiness Teaching Center of Armenia State Agrarian University with support from the Caucasus Agricultural Development Initiative of the United States Department of Agriculture

Name of processing company: _____
Type of processing operation (dairy, meat, fish, vegetable/fruit cannery): _____
Location of processing operation: _____
Date of establishment of company _____
Date of establishment of company at this location _____
Name of respondent: _____
Position of respondent in the processing operation: _____
Name of interviewer _____
Date of interview: _____

Note to Interviewer:

Please explain to the respondent and officials at the processing company that:

- *This data collection is supported by CADI / USDA and implemented by ICARE / ATC.*
- *The purpose of the data collection is to improve the understanding of the experiences and needs of Food Processing firms in Armenia with respect to food safety practices and needs for technical assistance.*
- *All information provided will remain confidential.*
- *A report will be published that will include aggregate statistics, and it will not be possible to identify the identity of any respondents or firms participating in this data collection.*
- *We would like to interview the person(s) most knowledgeable about and responsible for food safety at the firm. We would like to conduct a single interview, and it is fine for that interview to be conducted with more than one person, if that would help ensure the most accurate responses to particular questions.*
- *Participation in this survey is completely voluntary.*
- *CADI / USDA and ICARE / ATC thank all involved for their time and support in this process.*

Section A: Food Safety Program-Related Information

A1. What is the number of staff members assigned to work in the area of food quality assurance or food safety oversight?

--

Note to interviewer: If ZERO, go to Question A3.

A2. What are the academic qualifications of (up to) the two highest trained individuals of these staff members?

Person 1

Person 2

University degree
In what field
From what University
In what year

University degree
In what field
From what University
In what year

A3. Did you or any of the staff members in your food processing operation receive training/consultation designed to improve food safety operations in the four-year period, 2007-2010?

Yes	No

Note to interviewer: If NO, go to Section B

A4. How many employees have received training/consultation designed to improve food safety operations between 2007 and 2010?

Total Still working for your firm

--	--

A5 If yes, we would like to ask some questions about specific food safety topics:

Topic of Food Safety Training / Consultation	Received (Yes/No)	Duration (days)	Provider	# of Employees Attending	Knowledge enhanced (Scale A)	Changes made (Scale B)	Degree of Further Training Needs (Scale B)
Good Manufacturing Practices and Basic							
HACCP							
Codex Alimentarius							
Internal Auditing							
Food Exporting Procedures							
Better Process Control School for canned food							
SERVSAFE for food service establishment							
Grade A Pasteurized Milk Ordinance							
Safe Milk and Milking Hygiene							
Farmer food safety training							
Good Meat Processing Practices							
Microbiological testing procedures							

Scale A 1-Strongly Disagree 2-Disagree 3-Neither Agree nor Disagree 4-Agree 5- Strongly Agree

Scale B 1-None 2- Not Much 3- Some 4- A Lot 5- Substantial

A6. To what extent do you believe that the following areas within your firm have improved as a result of each of the trainings?

Area	Extent of Benefit
	1 = No Benefits 2 = Some Benefits 3 = Substantial Benefits 4 = Completely Changed Firm's

<i>Indicate the LETTER of the food safety area in the cell to the right corresponding to Question A5; for instance, if the training was in "HACCP", write "b" above the column to the right.</i>					
Handling of raw materials					
Processing equipment					
Processing methods					
Packaging and labeling					
Cold storage – refrigeration and freezing					
Distribution					
Employee hygiene					

A7. To what extent do you agree that the training/consultation you have received has provided the following benefits to your processing operation?

<u>Perceived Benefit</u>	<u>Extent of Benefit</u>				
	1 = No Benefits 2 = Some Benefits 3 = Substantial Benefits 4 = Completely Changed Firm's Procedures				
<i>Indicate the LETTER of the food safety area in the cell to the right corresponding to Question A5; for instance, if the training was in "HACCP", write "b" above the column to the right.</i>					
Better worker health					
Safer working conditions					
Fewer safety violations					
Less product recalls					
Improved profitability					

Section B: Food processing operations.

B1. Have you developed Sanitation Standard Operating Procedures (SSOPs)?

Yes	No
-----	----

Note to interviewer: If NO, go to question B3.

B2. If yes, in what areas has your firm developed specific SSOPs? (Check all that the respondent reports)

<input type="checkbox"/>	Water safety
<input type="checkbox"/>	Pest control

	Waste management
	Prevention of cross contamination
	Conditions and cleaning of food-
	Hand-washing and sanitizing
	Employee health
	Other

B3. Have you initiated development of a HACCP plan in your facility?

Yes	No
-----	----

Note to interviewer: If NO, go to Question B6

B4 Have you conducted Hazard Analyses for products manufactured in your facility?

Yes	No
-----	----

Note to interviewer: If NO, go to Question B6

B5. What are the most important hazards identified during the Hazard Analysis?

Biological Hazards

	Pathogen bacteria (Salmonella, S. Aureus, Cl. Botulinum, Cl. Perfringens, etc)
	Viruses (Hepatitis A, Norwalk virus, etc.)
	Parasites

Physical Hazards

	Metal
	Glass
	Plastic

Chemical Hazards

	Cleaning/sanitizing materials
	Pesticides
	Chemicals used in plant (lubricants, etc)
	Drug residues
	Allergens

B6. Have you identified CCPs for any product? If Yes, please name one _____

Yes	No
-----	----

Note to interviewer: If NO, go to Question B9

B7. What Critical Control Points (CCPs) have you established for that product?

(Make a note of the CCP and its Critical Limit)

	CCP	CL
	Raw material receipt	
	Pasteurization	
	Acidification	
	Cooking	
	Cooling	
	Labeling/Packaging	
	Other	

B8. Have you established monitoring procedures for all CCPs established?

Yes	No
-----	----

B9. Do you keep and maintain records pertaining to food safety in the summary of HACCP form?

Yes	No
-----	----

Note to interviewer: If NO, go to Question B11

B10. If YES, place an "X" in the box next to the specific type of records kept:

	Product master records
	Batch or manufacturing records
	Material / component control records
	Personnel records
	Training records
	Equipment maintenance logs
	Cleaning logs
	Hazard Analysis worksheet
	Summary HACCP plan
	Records of CCP monitoring
	Records of corrective actions
	Records of verification activities
	Laboratory records

Note to interviewer: Read all the answers

B11. Do you have systemized training schedules for your employees?

Yes	No
-----	----

Section C: Firm training needs

C1. Peak number of staff members in the past 12 months (full-time and part-time):

- 1-4; 5-50; 51-100; 101+

C2. Do you feel that the number of staff members in your processing operation is adequate to do all the food safety tasks involved?

Yes	No
-----	----

C3 Do you feel that food safety is being adversely affected by an inadequate number of trained staff members?

Yes	No
-----	----

C4. To what extent do you feel that staff members of the company follow good food safety practices to ensure that the company enjoys a good reputation in this regard?

Always	
Mostly	
Sometimes	
Never	

C5. Would you like your staff members to take “refresher” food safety short courses to keep up to date on new developments in food safety?

Yes	
No	
Not sure	

Note to interviewer: If NO, Stop the interview and THANK the interviewee.

C6 If YES, on what topics?

Topic	Offered on a Free	Offered on a Paid basis of 5,000

C7. What are reasonable ways for the type of training you are interested in, for your firm’s staff members, to be delivered? [check all that apply]

Delivery method	
On-the-job training	
Classroom training	
In-plant consultancy	
Conferences	
Web-based	