

Impact of the Institutional Training on the Quality Control Practices in Fish Processing Centres

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The paper deals with the evaluation of the various institutional training activities and the impact of training on the fish processing workers in Cochin and Tuticorin regions. The results revealed that the overall training evaluation index was 83.79% for Cochin region and 82.91% for Tuticorin region. The higher index scores revealed that in both centres, the training courses were organised more effectively among the processing workers. The overall impact scores (Mean = 83.5% and 93.39%) were also found to be high. Further, the use of critical practices such as observing personal hygiene, use of adequate water for washing, proper icing of materials, use of cleaning schedules and proper methods of storage had increased as a result of these training courses among the processing workers.

Key words: Institutional training, quality control practices, fish processing

In order to improve the knowledge, attitude and skill levels of processing plant workers, institutional training programmes are useful and the infrastructural facilities available in the training institutions are effectively utilised. Trained personnel are found to perform the jobs better than the untrained personnel (Sohal & Fulzele, 1986, Kandoran *et al.*, 1993). All quality management systems of seafood processing, training of workers, supervisors and technologists are stressed so as to improve their technical know-how and the quality of products. The Central Institute of Fisheries Technology (CIFT), Cochin provides trainers training to the field staff of Marine Products Export Development Authority (MPEDA), Cochin who in turn train the fish processing workers in several parts of the country every year.

In this context, a study was undertaken with the following specific objectives:

- i. To determine the socio-economic characteristics of trained processing plant workers in the Cochin and Tuticorin regions

- ii. To evaluate the institutional training programmes conducted among the processing plant workers in Cochin and Tuticorin regions
- iii. To evaluate the knowledge levels of trained processing workers on the quality control practices and
- iv. To evaluate the impact of training programmes among the processing workers on the quality control practices adopted.

Materials and Methods

The study was conducted in the Cochin region of Kerala and Tuticorin region of Tamilnadu. All the fish processing units, where the training programmes of MPEDA had been conducted during 1998-99, were included for evaluation. A sample of 20-40 % of the total number of persons trained in each unit was selected. Thus, the data were collected from 60 processing workers of Tuticorin region and 80 processing workers of Cochin region. Data from the selected respondents were collected through personal interviews, using structured and pre-tested interview schedules.

The data collected were analysed by calculating percentages, mean scores and t values. Training evaluation index was calculated by assigning to each training aspect the scores of 3, 2 and 1 for the response categories such as fully agree, partially agree and do not agree, and by using the formula given below:

$$\text{Training evaluation index of a respondent} = \frac{\text{Score obtained} \times 100}{\text{Max. score possible}}$$

Each training aspect was also analyzed in terms of the mean scores calculated among the respondents. Knowledge index and impact index were developed and used to calculate the extent of knowledge and impact among the respondents.

Results and Discussion

The socio-economic variables of processing personnel taken for the study are given in Table 1. It is evident that the mean scores of processing personnel from Cochin region were found to be higher in most of the variables viz., age, education, experience, annual income and number of information sources used than that of the respondents from Tuticorin region. Number of days employed per year was found to be more or less equal in both the regions. Thus, it could be seen that most of the respondents in both regions

were young, mostly unmarried, had about 302 days of work in a year, had 3-6 years of experience and earned about Rs.15,000 - 20,000 in a year.

Table 1. Socio-economic variables of processing plant workers

Quantitative variables	Cochin region		Tuticorin region	
	Mean	SD	Mean	SD
Age, years	29.49	8.30	20.40	2.49
Education, Scores	3.80	0.54	3.25	0.84
Period employed, days.year ⁻¹	302.19	28.70	302.50	52.02
Experience, years	5.94	4.75	3.78	2.09
Family size, No.	5.00	1.74	5.68	1.75
Annual income, Rs.	19,634.25	3,139.25	15,289.00	2,764.69
Number of information sources used	6.86	2.61	3.05	1.61

The results in Table 2 revealed that all the selected processing workers in Tuticorin region were in the 'unmarried' category, while only 65% of the respondents were in that category in Cochin region. 98.75% of the

Table 2. Qualitative variables of processing plant workers

Variables	Cochin region		Tuticorin region	
	No.	%	No.	%
Marital status				
Married	28	35.00	-	-
Unmarried	52	65.00	60	100.00
Occupation	80	100.00	60	100.00
Fish processing				
Training need				
Needed	79	98.75	46	76.67
Not needed	1	1.25	14	23.33
Job satisfaction				
Not satisfied	-	-	1	1.67
Satisfied	44	55.00	3	5.00
Well satisfied	16	20.00	19	31.67
Very well satisfied	20	25.00	37	61.66
Type of unit in which employed:				
QCIA	8	10.00	10	16.67
IPQC/MPQC	32	40.00	50	83.33
EU approved	40	50.00	-	-

respondents in Cochin region desired periodical training courses in fish processing, and hygiene and sanitation subjects, while, only 76.67% needed training on these subjects in Tuticorin region. On job satisfaction, in both regions, the respondents were found to be “satisfied” with their present work. In Cochin region, the processing factories were mostly either IPQC type of units (40%) or EU approved units (50%) while in Tuticorin region, they were mostly of IPQC (83.33%) type.

It is seen from Table 3 that the average daily production in fish processing factories was 9 t in the Cochin region while it was 4.16 t in Tuticorin region. In terms of production capacity, it was around 68% utilization in Cochin region and 42.66% utilization in Tuticorin region. Though in Tuticorin region, the number of pre-processing personnel employed per unit was higher than that of the units in Cochin region, the average number of processing personnel employed were found to be lesser in Tuticorin region (Male = 11.6; Female = 59) than in Cochin region (Male = 16.4; Female = 102). The number of days of work in the processing factories was higher in Tuticorin (349.6) than in Cochin (303.6), probably, due to the operation of lesser number of factories in Tuticorin region.

Table 3. Production and employment details of fish processing factories taken for the study

Variables	Cochin region		Tuticorin region	
	Mean	SD	Mean	SD
Production capacity, t.day ⁻¹	13.20	5.24	9.75	5.01
Average daily production, t.day ⁻¹	9.00	4.75	4.16	1.32
No. of personnel employed				
Male employees	16.45	7.16	11.66	4.92
Female employees	102.30	106.04	59.00	53.55
Technical personnel	7.40	4.44	3.00	1.26
No. of days of work per year	303.60	29.64	349.66	24.57
No. of hours of work per day	12.05	3.98	11.50	1.22

The various training activities and the mean scores (range 1 to 3) given by the processing workers who had attended the training earlier are given in Table 4.

Table 4. Evaluation of training programmes by processing plant workers in Cochin and Tuticorin regions

Training aspects evaluated	Cochin region		Tuticorin region		t
	Mean	SD	Mean	SD	
Conducting training need assessment among the trainees	2.49	0.69	1.60	0.89	6.88**
Explaining the objectives of training	2.59	0.50	2.90	0.33	4.44**
Formulation of training syllabus	2.61	0.52	2.70	0.68	0.70
Selection of candidates for training	2.56	0.73	2.90	0.39	2.94**
Adequacy of trainers' expertise	2.93	0.27	2.90	0.44	1.24
Quality of training given by MPEDA	2.81	0.39	2.80	0.47	0.85
Conducting theoretical and practical aspects in an understandable manner	2.56	0.50	2.00	0.88	4.77**
Training arrangements made	2.80	0.54	2.90	0.40	1.21
Stipend given to the trainees	2.65	0.55	2.40	0.91	2.02*
Training methods used viz., lectures, practicals, etc.	2.33	0.71	2.60	0.64	2.51*
Providing training course materials/publications	2.40	0.74	1.10	0.45	11.86**
Explaining of the causes of fish spoilage	2.55	0.55	2.90	0.42	3.93**
Explaining of the need for preserving the quality of fish and icing	2.58	0.50	2.80	0.46	2.32*
Explaining of the personal hygienic practices to be followed	2.86	0.35	3.00	0.18	2.12*
Explaining the sanitation aspects	2.45	0.61	2.90	0.28	5.47**
Knowledge on cleaning schedule, chlorination of water and use of potable water	2.48	0.53	2.70	0.51	2.15*
Attitude among workers towards MPEDA	2.86	0.35	2.60	0.58	3.10**
Providing skill oriented training on improved fish handling	2.23	0.67	2.70	0.48	4.96**
Follow-up work of MPEDA after the training	1.56	0.69	1.90	0.91	2.62*
Post training evaluation to assess the impact of training	2.03	0.81	1.60	0.56	3.35**
Overall training evaluation index	83.79	8.47	82.91	7.88	0.62

* Significant at 5% level; ** Significant at 1% level

It is seen that in Cochin region, the respondents had given lower scores to the following training activities and hence, they required improvement in future programmes:

- i. Follow-up work after the training (1.56)
- ii. Post-training evaluation immediately after the training (2.03)
- iii. Providing skill oriented training on improved fish handling (2.23)
- iv. Training methods used such as lectures, practicals, audio-visuals, discussions etc. (2.33)
- v. Providing training course materials/publications (2.40)

Further, it is seen that in Tuticorin region, the respondents had given lower scores to the following training activities and hence, they required improvement in future programmes:

- i. Providing training course materials and publications (1.10)
- ii. Conducting training need assessment before commencing the training (1.60)
- iii. Post-training evaluation immediately after the training (1.60)
- iv. Follow-up work after the training (1.9)
- v. Conducting theoretical and practical aspects in an understandable manner (2.0).

The calculated t values revealed that between Cochin and Tuticorin regions, out of 20 training activities, the mean scores were significantly different for 16 activities. Thus, the evaluation varied significantly between the two regions on most of the training aspects and to bring further uniformity in the organization and implementation, more attention may have to be given in both these centres. The overall training evaluation index was 83.79% for Cochin region and 82.91% for Tuticorin region and the higher index scores revealed that in both centres, the training courses were organized more effectively among the processing workers.

The mean knowledge scores obtained by the processing workers on the various subjects are given in Table 5.

In Cochin region, the processing workers had adequate knowledge about all subjects listed in Table 5 except one subject *viz.*, bacteria of public health significance (2.13). In Tuticorin region also, the processing workers had perceived low knowledge on the above subject (2.02) as only the technologists were trained in advanced subject areas. These processing workers had attended duties such as grading, weighing, checking, setting, packing, etc.

Table 5. Evaluation of knowledge levels of trained processing workers on the quality control practices

Subjects	Cochin region		Tuticorin region		t
	Mean	SD	Mean	SD	
Causes of fish spoilage and possible hazards	2.23	0.57	2.55	0.59	3.26**
Use of adequate potable water for washing	2.58	0.55	2.92	0.28	4.43**
Use of disinfectants such as chlorination of water	2.65	0.51	2.78	0.42	1.66
Use of detergents for washing and following the cleaning schedule	2.65	0.48	2.87	0.34	2.97**
Maintenance of buildings and sanitary practices to be followed	2.38	0.64	2.85	0.40	5.01**
General hygiene in the factory premises	2.70	0.46	2.73	0.48	0.41
Proper methods of sorting, grading, weighing, packing, etc.	2.66	0.50	2.53	0.57	1.42
Personal hygiene practices viz. cleanliness, etc.	2.71	0.46	2.95	0.22	3.72**
Bacteria of public health significance	2.13	0.64	2.02	0.75	0.92
Handling of ice	2.48	0.62	2.77	0.43	3.14**
Overall knowledge index	83.83	12.29	89.89	9.33	3.18**

* Significant at 5% level; ** Significant at 1% level

The overall knowledge index scores were higher for the respondents of both Cochin and Tuticorin regions (83.83% and 89.89%, respectively). Further, the higher knowledge scores indicated that the training courses conducted had brought out desired changes in their knowledge levels and revealed the positive impact of the training.

The mean impact scores on the various impact items as perceived by the processing workers are given in Table 6. The overall impact scores were calculated and found to be high (83.5% and 93.39%, respectively).

The results revealed that in both Cochin and Tuticorin regions, the processing workers had strongly agreed with the various impact items. Thus, the training courses conducted had brought out not only the positive changes in the attitude of processing workers on improved fish handling practices, but also increased their knowledge and skills in hygienic handling of fish. The adoption of critical practices such as observing personal hygiene, use

Table 6. Impact of training among processing workers

Impact items	Cochin region		Tuticorin region		t
	Mean	SD	Mean	SD	
Attitude towards fish handling practices has changed positively	2.56	2.68	2.68	0.54	1.33
Keen in observing personal hygiene while handling fish	2.44	0.50	2.85	0.40	5.23**
Using adequate quantity of potable water for washing	2.56	0.50	2.88	0.32	4.33**
Icing of fish/prawn is done properly	2.63	0.49	2.82	0.39	2.50*
Always following the cleaning schedule to be used	2.54	0.57	2.73	0.48	2.14*
Increase in the knowledge and skill in the preparation of chlorinated water, detergent solution, etc.	2.24	0.53	2.82	0.50	6.51**
Use of proper methods of storage of processed materials	2.50	0.50	2.80	0.48	3.55**
Increase in knowledge on correct methods of peeling, weighing and packing	2.44	0.50	2.85	0.36	5.42**
Increase in knowledge on general cleanliness and hygienic handling	2.69	0.47	2.83	0.42	1.91
Acquired more skills in hygienic handling of fish due to this training	2.46	0.55	2.75	0.54	3.08**
Overall impact index	83.50	11.20	93.39	10.83	5.24**

* Significant at 5% level; ** Significant at 1% level

of adequate water for washing, proper icing of materials, proper methods of storage and use of cleaning schedules had also increased as a result of these training courses among processing workers.

The following constraints were reported by the fish processors of the units studied in Cochin and Tuticorin regions:

Cochin region

- i. Need for training to all categories of staff *viz.*, processing workers, technologists and managers in the processing units
- ii. Price fluctuations in export markets
- iii. Limited number of buyers, stringent quality norms and related expenses
- iv. Difficulties in getting potable water and electricity

Tuticorin region

- i. Dropout of processing workers and training requirement of fresh recruits
- ii. The video films screened during the training were outdated
- iii. One day training was inadequate and two days training would be required for processing workers
- iv. Lack of infrastructural facilities in the fish landing centers

The critical weak areas where more efforts would be required are as follows:

- i. Follow-up work after the training
- ii. Conducting pre and post-training evaluation
- iii. Providing skill oriented training on improved fish handling
- iv. Use of various training methods and
- v. Providing training course materials/publications.

The overall training evaluation index scores (83.79% and 82.91%) revealed that in both centres, the training courses were organized effectively among the processing workers. The higher impact index scores revealed the positive impact of the training on their adoption behaviour.

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