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Evaluation of Information Needs of Fish Processors

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Technological information needs of fish processors were studied by selecting a sample of 43 fish processors. The results revealed that the mean information need index was 63.60%. Though the average information need quotient (INQ) values ranged from 52.90 to 82.79 for the five major subject areas, the 'F' was found to be non-significant (F=1.53). Of the 40 specific subject items, the INQs were high (86.05 to 100) in ten subject items while they were low (23.6 to 37.21) in seven subject items. It was seen that the variables viz., type of processing unit, production capacity and number of freezers were found to have positive association with information need.

Key words: Information need quotient (INQ), variables

Introduction of new regulations and quality assurance systems such as Hazard Analysis Critical Control Points (HACCP) among the seafood processing units have necessitated constant upgradation of information management in this area. Information needs on key fish processing areas such as infrastructural facilities required for fish processing, quality of raw material, monitoring of processing parameters, maintenance of quality standards and related management issues among fish processing personnel are to be periodically monitored. Information gaps among wider sections of fish processors can result in non adoption of recommended techniques and may increase the production costs.

In order to determine the information needs of fish processors and to strengthen the technology transfer efforts, a research study was conducted with the following specific objectives: i) to evaluate the technological information needs of fish processors and ii) to determine the variables influencing the information needs of fish processors.

Materials and Methods

Data on information needs and associated variables were collected during 1996-97 from a sample of 43 senior managers of fish processing units in Kerala by using structured interview schedules. Information need was measured through a two point rating scale, 'Needed' and 'Not needed' on selected forty items in five major subject areas viz., infrastructural facilities, raw material quality and preservation, pre-processing of fish, fish processing and packaging and related processing aspects. For the calculation of the information need quotient (INQ), the maximum information need score was taken as 40 and the actual information need of each respondent was calculated as a percentage of this maximum score. The selected forty items were grouped into high and low need categories based on their mean INQ and standard deviation ($\bar{X}$: 63.60; SD: 21.90).

Fourteen quantitative independent variables (Table 1) were analysed to determine their association with the information need. Six qualitative variables viz., type of processing unit, type of freezing undertaken, place of peeling of raw materials, sources of raw

Table 1. Quantitative key variables of processing units sampled

Quantitative variables	Sample units (n=43) $\bar{X}$	Units established within 10 years n^1=20) $\bar{X}$	Units established before 10 years (n^2=23) $\bar{X}$	't'
Number of years of functioning	14.67	5.80	22.39	9.83**
Production capacity of the factory (tonnes/day)	19.18	16.25	21.73	1.08
Number of freezers	3.13	2.85	3.39	1.03
Cold storage capacity of the factory (tonnes)	198.95	207.75	191.30	0.33
Ice production capacity of the factory (tonnes/day)	11.84	8.92	14.39	1.31
Number of male workers	16.55	14.95	17.95	0.73
Number of female workers	44.37	45.20	43.65	0.13
Number of days of work in a year	299.41	305.35	294.26	0.85
Number of hours of work per day	15.20	15.15	15.26	0.06
Number of marine products processed	4.67	4.60	4.73	0.36
Number of technical personnel employed	5.32	5.40	5.26	0.11
Number of technical personnel who had attended training	1.60	1.65	1.56	0.23
Number of years of experience of senior technologists	8.48	8.52	8.45	0.03
Average daily production of frozen products (tonnes)	6.32	6.45	6.21	0.14
Information need (index) (y)	63.60	60.50	66.30	0.91

**Significant at 1 percent level

material, type of raw material purchased and institutions contacted for guidance were also analysed. Standard statistical techniques (Snedecor & Cochran, 1971) such as 't' tests, χ^2, correlation and multiple regression analyses were used to analyse the data.

Results and Discussion

Table 1 presents the key variables of processing units sampled and also the difference between the units established within 10 years and those in operation for more than 10 years. The results revealed that on an average, the actual production was about 6 tonnes per day against an installed capacity of about 19 tonnes. The mean cold storage capacity of the factories was 199 tonnes and the number of days of work in a year was 299 days. The mean scores revealed that each processing unit had employed about 17 male workers, 44 female workers and five technical personnel. The number of technologists who had attended training programmes was two persons per factory. The information need index of these respondents was found to be 63.60%.

Table 2. Average information need quotients of major subject areas in fish processing

Major subject areas	Average INQ	Chi-square values
Infrastructural facility	65.11	6.75
Raw material quality and preservation	52.90	8.84*
Pre-processing aspects in the processing plant	57.36	98.01**
Processing, packaging and quality	64.61	164.41**
Related processing aspects	82.79	22.07**
F value	1.53	

*Significant at 5 percent level; **Significant at 1 percent level

Table 3. Information need quotients on each subject item for the fish processing industry

Subject items	Information need quotient (INQ)
Infrastructural facilities	
Freezers and freezing systems	62.79
Processing and packaging machinery	69.77
Processing hall facilities	55.81
Cold storage requirements	58.14
Laboratory equipments and facilities	79.04
Raw material quality	
Ratio of ice to prawn/fish	41.86
Optimum period of storage in ice	60.47
Temperature of the incoming raw material	41.86
Defects observed in raw materials and their remedial measures	67.44
Pre-processing	
Water quality parameters	83.72
Information on water testing	83.72
Common defects in water and their remedial measures	86.05
Extent of chlorination of water for washing various items during pre-processing	37.21
On chlorination of ice	30.23
On storage and handling of ice	30.23
On the use of detergents & disinfectants	65.12
Recommended procedure for handling and peeling of fresh prawns	46.51
Iced storage of peeled materials and recommendations	55.81
Disposal of waste materials	86.05
Recommended cleaning schedule	41.86
Personal hygiene and sanitation aspects	41.86
Processing	
Operational freezing mechanisms including time and temperature standards	65.12
Excess weight addition to compensate drip loss	60.47
Use of chemicals/additives	90.70
Blanching/cooking/other processing details	76.74
Processing and glazing aspects before loading the trays in freezer	48.84
Extent of chlorination of water used for washing various items in the processing hall	23.26
Recommended cleaning schedule to be used in the processing hall	30.23
Personal hygiene and sanitation aspects to be followed in the processing hall	32.56
Packaging techniques	88.37
Packaging materials and their specifications	90.70
Storage temperature fluctuations and remedial measures	86.05
Shelf life of various frozen fishery products	86.05
Transportation of finished products	34.88
Testing procedures to keep up quality standards	90.70
Related technological aspects	
Preparation of value added products	81.40
Marketing aspects	62.79
Treatment of effluent water	88.37
Seasonal and region-wise availability and abundance of fishes, cephalopods, crustaceans etc.	81.40
Information on recent advances in fish processing/training courses offered etc.	100.00

The 't' tests revealed that there were no significant differences between the processing units established within 10 years and those in operation for more than 10 years. Kandoran *et al.* (1993) reported that when the freezing plants were categorised as Quality Control Units (QCIA units), and In-process Quality Control Units (IPQC units), there were significant differences between them on several variables.

The average information need quotient scores on the major subject areas of fish processing are given in Table 2. It was seen that except one, all other χ^2 values calculated among the INQ of different subject items within the major subject areas were found to be highly significant. There was significant difference among the various items under each of the four major subject areas, indicating the multi dimensional nature of the subjects. In one area viz., infrastructural facilities, the various items did not differ significantly among themselves in terms of the information need.

Though the average INQ ranged from 52.90 to 82.79 for the five major areas, the F value calculated to test the mean differences was found to be non significant (F=1.53). Hence, the average information need of the five major subject areas did not differ significantly. This revealed that the fish processors had assigned more or less equal information need requirement on the major subject areas.

Table 3 presents the information need quotients of 40 subject items listed in the inventory. It was seen that of the 40 technological subject items, only in ten subject items, INQ was high (86.05 to 100) while it was low (23.26 to 37.21) in seven subject items. The technological areas in fish processing such as use of chemicals/additives, packaging materials and techniques, shelf life of various frozen fishery products and testing procedures for quality control, had higher INQ.

The low INQ on the seven items implied that these need perceptions were based on the extent of information gaps and not based on their relative importance in fish processing. Subjects such as chlorination of water and ice, cleaning schedule, and personal hygiene and sanitation were found to be well known practices and hence, these subject items had low INQ.

Table 4. Qualitative variables associated with information need

Qualitative variables	Information need (n-43) Low (n^1=26) %	High (n^2:17) %	χ^2
Type of processing unit			
QCIA	46.15	5.88	
IPQC	53.85	94.12	9.83**
Type of freezing			
Block frozen	50.00	58.82	
IQF	11.54	—	2.14
Both	38.46	41.18	
Peeling of raw materials			
Within the processing plant	46.15	52.94	
Outside the processing plant	53.85	47.06	0.19
Sources of raw material			
From Kerala	23.08	35.29	
From two States	23.08	35.30	
Three or more States	53.84	29.41	2.48
Type of raw materials			
Purchased			
Peeled	53.84	29.41	
Unpeeled	23.08	23.53	3.19
More than one type	23.08	47.08	
Institutions contacted for guidance			
CIFT/EIA/Both	23.08	41.18	
More than two institutions	76.92	58.82	1.59

**Significant at 1 percent level

Table 5. Variables influencing the information needs of fish processors

Quantitative variables	Correlation coefft. (r)	Reg. Coefft. (b)	Std. Error (SE)	't'
Number of years of functioning of unit	0.065	0.22	0.342	0.066
Production capacity	0.315*	0.368	0.530	0.695
Number of freezers	0.345*	2.334	4.741	0.492
Cold storage capacity	0.024	0.028	0.041	0.703
Ice production capacity	0.205	0.071	0.360	0.199
Number of male workers	0.076	0.130	0.593	0.230
Number of female workers	-0.013	-0.241	0.245	0.985
Number of days of work in a year	-0.032	-0.045	0.094	0.487
Number of hours of work per day	0.175	-0.045	0.755	0.060
Number of marine products processed	0.076	3.587	3.350	1.071
Number of technical personnel employed	-0.139	-0.178	1.214	0.147
Number of technical personnel who underwent training	0.073	6.379	5.463	1.168
Number of years of experience of senior technologist	-0.348*	-0.895	0.485	1.845
Average daily production of frozen products	0.041	-0.452	0.842	0.537

*Significant at 5 percent level; R^2 = 3.386; F=1.024 NS

The χ^2 values calculated to determine the association between the information need and the qualitative variables are given in Table 4. It is evident that only one variable viz., the type of processing units (QCIA/IPQC) had significant positive association while other qualitative variables had no significant association with the information need. IPQC units had higher information need quotients than the QCIA units and therefore these units would have to use more number of information sources.

The simple correlation coefficients and partial regression coefficients computed between the information need scores of the respondents and the independent variables are given in Table 5. The results revealed that there was no significant relationship between the extent of information need and the number of years of operation of the processing unit, cold storage capacity, ice production capacity, number of workers employed, nymber of days of work in a year, number of marine products processed and average daily production of frozen products. The results also showed that information need increased with the production capacity of processing units and decreased with the experience of the senior technologists.

In the multiple regression analysis when all the 14 variables were taken together, none of the variables had shown significant influence over the information need scores. The R^2 was found to be 0.3386 and non significant at 5 percent level. Hence, the selected 14 variables had not explained the variation in the information need scores significantly. This might be because of the fact that the independent variables analysed had only indicated the profile of processing units selected and the variables such as attributes of practices, extent of use of various technological parameters and other psychological variables had not been included.

Thus, the study has shown that out of the forty technological subject areas selected, INQ was found to be high in only ten subject items in this dynamic and competitive field. It is also seen that to fit a prediction equation on the information need scores of processors, further evaluatory studies are to be done.

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