

Discriminant Analysis of Selected Variables in the Adoption of Fish Curing

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Discriminant functions were worked out for adoption or non-adoption of five improved practices in fish curing. Four variables measured quantitatively formed the basis for discrimination. In four out of five equations, the selected variables were found to discriminate significantly between the adopters and non-adopters.

In an earlier study (Kaul & Balasubramaniam, 1982) it has been shown that several quantitative and qualitative variables correlate significantly with the adoption index in the case of fish curing. For the present study, the four quantitative variables significantly associated with adoption index were selected for discriminant analysis with individual improved practices.

Materials and Methods

The selected variables are total investment (X_1), experience in fish curing in years (X_2), distance of curing yard from the house in km (X_3), and size of the curing yard in cu. ft. (X_4). The improved practices selected were (1) use of good quality fish (2) use of correct salt to fish ratio (3) keeping the floor, salting tanks and accessories clean (4) use of good potable water and (5) use of table or clean floor. The remaining three practices namely use of detergents and disinfectants, use of preservatives and use of improved packing materials were not taken into consideration because there were no adopters for these three. The study was conducted on 110 fish curers of two fish curing centres in Kerala.

Results and Discussion

The percentage of adopters for the five improved practices is given in Table 1.

Discriminant functions were worked out for each individual practice so as to find out whether the four variables could discriminate

Table 1. *Percentage of adopters for the five improved practices*

Practice	% adopters
1. Use of good quality fish	90.91
2. Use of correct salt to fish ratio	68.18
3. Keeping the floor, salting tanks and accessories clean	26.36
4. Use of good potable water	25.45
5. Use of table or clean floor	10.00

significantly between adopters and non-adopters in each case. The method followed was as given by Goulden (1959) and Tintner (1952).

The difference between the means of adopters and non-adopters are presented in Table 2.

The Gauss multipliers were worked out from the sums of squares and products (Table 3) by the Doolittle method. The resulting four simultaneous equations were solved for the coefficients of the four variables. The five discriminant functions are presented in Table 4.

The different discriminant functions can be seen from Table 4. In all cases, the weightage is maximum for the distance of curing yard from the house, followed by experience in fish curing (in years). The discriminant function for one of the practices, namely, use of correct salt to fish ratio, is not significant.

Table 2. *Differences between the means for each practice*1. *Use of good quality fish*

	X ₁	X ₂	X ₃	X ₄
Mean (adopters)	6710	16.15	0.795	10510.64
Mean (non-adopters)	7000	16.50	1.200	20597.00
Difference between the means	-290	-0.35	-0.405	-10086.36
Pooled mean	6736.36	16.18	0.83	11427.58

2. *Use of correct salt to fish ratio*

Mean (adopters)	6873.33	15.65	0.847	10740.65
Mean (non-adopters)	6442.86	17.31	0.80	12899.57
Difference between the means	430.47	-1.66	0.047	-2158.92

3. *Keeping the floor, salting tanks and accessories clean*

Mean (adopters)	9137.93	10.52	1.12	13922.72
Mean (non-adopters)	5876.54	18.21	0.73	10534.26
Difference between the means	3261.39	-7.69	0.39	3388.46

4. *Use of good potable water*

Mean (adopters)	10428.57	14.57	1.14	19912.82
Mean (non-adopters)	5475.61	16.73	0.73	8530.18
Difference between the means	4952.96	-2.16	0.41	11382.64

5. *Use of table or clean floor*

Mean (adopters)	11045.45	7.91	1.09	15834.09
Mean (non-adopters)	6257.58	17.10	0.80	10937.97
Difference between the means	4787.87	-9.19	0.29	4896.12

Table 3. *Sums of squares and products (uncorrected) for four variables*

	X ₁	X ₂	X ₃	X ₄
X ₁	7027000000	11398000	690750	10431852500
X ₂		42076	1366.5	18954000
X ₃			136.75	1282872
X ₄				24241781156

Table 4. Results of discriminant analysis

Practice	Coefficients for				R ²	F	Discriminating point (Z)
	X ¹	X ²	X ³	X ⁴			
1. Use of good quality fish	-1.0	122.196	3425.663	1.081	0.118	3.51**	10437.285
2. Use of correct salt to fish ratio	-1.302	357.465	-3769.982	1.0	0.030	0.82 NS	
3. Keeping the floor, salting tanks and accessories clean	13.165	-4607.455	39338.638	-1.0	0.206	6.80**	35359.047
4. Use of good potable water	2.022	8.198	2147.56	1.0	0.368	15.30**	26963.618
5. Use of table or clean floor	43.618	-11807.346	23799.852	-1.0	0.158	4.92**	111109.989

**Significant at the 1% level; NS = Not significant

All the remaining F values are significant at the 1% level. The cutting points have also been shown against each function. In the case of the first practice, the total investment and the size of the curing yard have almost equal weightage.

Thus we see that the discriminant analysis has shown that it is possible to discriminate between adopters and non-adopters on the basis of the selected four quantitative variables in all cases except one practice.

References

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