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PERCEIVED PROBLEMS OF PRODUCTION AND MARKETING OF VALUE ADDED FISH AND FISH PRODUCTS IN ASSAM - AN EXPLORATORY STUDY

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ABSTRACT
An attempt was made to identify the problems of production and marketing of value added fish products in different eating joints of Assam during 2013-15. A total of eighteen fish items were being sold in different eating joints. The problems associated with production and selling of value added fish products as perceived by eating joints were lack of awareness about value added fish items, non-availability of suitable species of fish, irregular supply of suitable variety of fish at proper time, high cost of fish, presence of intra-muscular bones in fish, non-availability of boneless fish like boneless chicken, *etc*. Overall, 60% of eating joints opined that there was a possibility of consumers choosing fish items if they could be made available. On an average, 54% managers/owners of eating joints opined that there was probability of utilizing low-valued fish for preparation of value added fish items. Recommendations were suggested in the study which would help the planners, policy makers, fish traders and fish producers in decision making for need based fish production, popularize value added fish products and efficient marketing in the state.

KEYWORDS: Value addition, Fish products, Perceived problems, Eating joints, Marketing.

INTRODUCTION

Fish as food has played an important role in human nutrition and health. From the time immemorial, fish has been associated with the socio-economic life of the people of Assam. More than 95% people of the state consume fish as the main source of animal protein in their diet in different forms either in fresh condition or traditionally preserved and processed forms (Karthikeyan *et al.,* 2007). The traditional fish products such as dried fish, fermented fish and smoked fish are commonly found in the markets of the region. Consumer perception of food has changed through history. The change in standard of living of people in the region and world over open an arena for the value added ready-to-cook or ready to serve convenience fish products in the region (Karthikeyan and Dhar, 2006). Value can be added to fish and fishery products ranging from live fish to ready to serve convenience products according to the requirement of different markets. These products are prepared hygienically and packed attractively to catch the markets (Majumdar, 2006). Assam is endowed with vast aquatic resources (4.9 lakh ha) and 216 fish species and produced 2.82 lakh tons of fish during 2014-15 (Economic Survey, Assam, 2014-15). In order to sustain fish farming as profitable ventures and to minimize post harvest losses, value addition of fish is very essential. Value addition implies processing of the end product or addition of ingredients which increases the acceptability of the product in terms of either convenience, or increase in shelf life (Majumadar, 2008). The pattern of marketing of value added products is completely different from the traditional fish trade. In case of value added fish products, marketing is dynamic, sensitive, complex and expensive. Since, there is good potentiality for fisheries development in Assam in terms of fishery resource availability and potentiality, it is the need of the hour to develop strategies based on consumption and preference patterns of value added fish and fish products, which have not received so much of attention in the state. With this background, an attempt was made to identify the perceived problems of production and marketing of value added fish and fish products in the state.

MATERIALS & METHODS

The study was carried out in Assam which is situated in the foothills of eastern Himalayan region between 88º25'E to 96.0º E longitudes, 24.5º N and 28.0º N latitude during 2013-15. Of the six agro-climatic zones of Assam, Sonitpur district from the north bank plain zone, Nagaon district from the central Brahmaputra valley zone, Dibrugarh from the Upper Brahmaputra valley zone, Metro Kamrup district from the lower Brahmaputra valley zone, and Cachar district from the Barak valley zone were selected for the study based on urbanization and fish production potential following judgement sampling (Kothari, 2004).

The possibility of marketing of value added fish and fish products were examined in different eating joints of the study area. The different eating joints considered for the study were fast-food restaurants, restaurants (rice as core item), bar- cum- restaurants, *Dhabas* and road-side chat-houses. The eating joints were selected from town/city area of each district through judgement and snowball sampling (Kothari, 2004). The judgement was based on popularity of the eating joints (according to local populace) and coverage of entire town/city. All together 300 eating joints comprising of 71 fast-food restaurants, 57 restaurants, 59 bar-cum-restaurants, 57 *Dhabas* and 56 chat houses were surveyed. The managers/owners of the eating joints were interviewed with a semi-structured interview schedule. The respondent managers/owners of the eating joints were interviewed regarding the major constraints of producing and marketing of valued added fish products using an open ended questionnaire. A manual describing details about different value added fish products with distinct photographs was used as stimuli for better interaction with the respondents.

Percentage Analysis Method was mainly used in the study to find out the relative difference between two or more attributes. Number of respondents indicating the same constraints was counted in frequency and then converted into percentage. The data thus collected were tabulated, statistically analyzed to interpret the results with use of Statistical Package for Social Sciences (SPSS) version -16.

RESULTS & DISCUSSION

Demand of fish in eating joints

The average daily requirement of fish was found high only in restaurants (4.28 kg).The reason being that most of these restaurants had served rice as the core items, where fish curry and fried fish were in the menu. The demand for fish was found to be less in fast food restaurants/outlets, bar cum restaurants, *Dhabas* and Chaat houses in comparison to meat. It might be due to the lack of awareness about value added fish products by the consumers and owner of the different eating joints. The detailed information about average daily requirement of fish and meat in different eating joints is presented in Table 1 and Figure 1. The present study revealed that the average daily requirement of fish in eating joints was less (2.39 kg) than meat (5.23 kg).

TABLE 1: Demand of fish and meat in eating joints

Type of eating joints	Average daily requirement of fish and meat in kg	
	Fish	Meat
Fast food restaurant/outlets	1.69	5.77
Restaurant	4.28	3.04
Bar cum restaurant	2.85	9.22
Dhaba	3.18	6.95
Chaat house	0.05	0.80
Overall	2.39	5.23

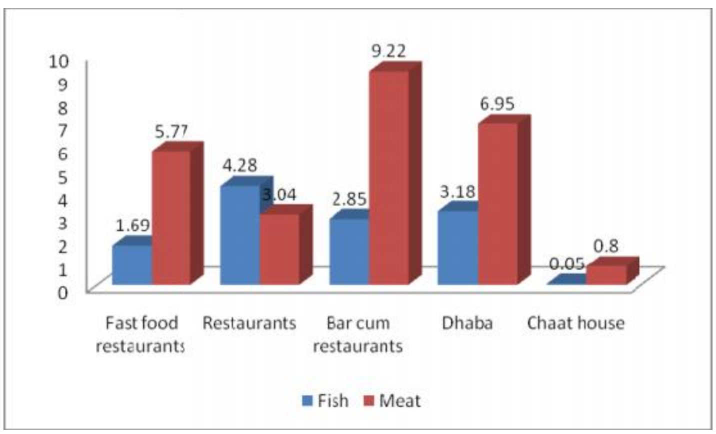

FIGURE 1: Average daily requirement of fish and meat (in kg) in different eating joints

Types of fish items sold in the eating joints

During the survey in the eating joints, it was found that altogether eighteen fish items were marketed in different eating joints (Table 2). In comparison to different fish recipes, the numbers of meat recipes were more (28 items). Fish curry and fish fry with different ingredients were found to be the highest selling items in eating joints followed by fish fry, steamed fish, fish chilly, fish bhujia, fish finger, fish tikka, fish tandoor, fish cutlet and fish momo. Few eating joints, which had not introduced value added fish products, would like to introduce fish finger, fish cutlet and fish momo in their menu. This had been reported by three fast food restaurants, six bar cum restaurants and five *dhabas*, ten fast food restaurants, two restaurants and two chaat houses. This findings indicated that there was good scope for popularize the value added fish items and marketing in the state.

Perceived problems associated with preparation and selling value added fish items

Respondents were asked to elucidate perceived problems associated with preparation and selling fish items during the investigation. A total of fifteen problems associated with preparation and selling fish items were identified (Table 3). Majority of respondents (91.7%) expressed that the main difficulties associated with preparation and selling fish products were less demand for fast food fish items (fish finger, fish cutlet, fish ball, fish pickle *etc.*) due to lack of awareness, non-availability of suitable varieties of fish for preparation of fish items, irregular supply of suitable fish species, high price of suitable varieties of fish, non-availability of boneless fish like boneless chicken and high time consumption for preparation were the problems associated with producing and selling fish products as reported by 50%, 45%, 31%, 20.7%, 19.7% and 18.7% of respondents, respectively. The problems like lack of awareness about fast food fish items by the firm, more seasonal fluctuation of price of fish for which they cannot change the rate in the menu, difficulties in removal of fish bones and lack of expertise for preparation of fast food fish items were reported respectively by 18.7%, 16.3%, 13.3% and 12.3% of respondents. Others problems like fish odour, low dressing yield which was about 50% loss through removal of fish bones, scale, viscera *etc.*, which cannot be utilized for other food items and difficult to keep the entire consumer preferred fish, were associated with preparation and selling value added fish items.

TABLE 2: Ready to eat fish items sold in different eating joints.

Fish items	Type of eating joints where ready to eat fish items sold					Overall
	Fast food restaurant	Restaurant	Bar cum restaurant	*Dhaba*	Chat house	
1. Fish curry	31(43.7)	57(100)	51(86.4)	57(100)	-	196(65.3)
2. Fish fry	30(42.3)	56(98.2)	53(89.8)	56(98.2)	1(1.8)	196(65.3)
3. Sorsori (curry with mustard paste)	22(31.0)	34(59.6)	39(66.1)	33(57.9)	-	128(42.7)
4. Tenga jul(Curry with sour taste)	25(35.2)	47(82.5)	25(42.4)	52(91.2)	-	149(49.7)
5. Steamed with mustard seed	12(16.9)	14(24.6)	20(33.9)	13(22.8)	-	59(19.7)
6. *Patat dia* (Fish in banana leaf)	1(1.4)	1(1.8)	-	7(12.3)	-	9(3.0)
7. Goose berry fish curry	1(1.4)	-	-	-	-	1(0.3)
8. Fish in bamboo shoot	1(1.4)	-	-	2(3.5)	-	3(1.0)
9. Fish chilly	10(14.1)	1(1.8)	25(42.4)	18(31.6)	-	54(18)
10. Fish do-piaza	-	-	6(10.2)	8(14.0)	-	14(4.7)
11. Fish bhujia	-	4(7.0)	6(10.2)	25(43.9)	-	35(11.7)
12. Fish toasted	-	2(3.5)	3(5.1)	6(10.5)	-	11(3.7)
13. Fish momo	1(1.4)	-	-	-	-	1(0.3)
14. Fish finger	6(8.5)	1(1.8)	26(44.1)	6(10.5)	1(1.8)	40(13.3)
15. Fish tikka	1(1.4)	-	12(20.3)	1(1.8)	-	14(4.7)
16. Fish tandoor	-	-	5(8.5)	5(8.8)	-	10(3.3)
17. Fish cutlet	-	-	5(8.5)	-	-	5(1.7)
18. Fish pokora	1(1.4)	-	1(1.7)	2(3.5)	-	3(1.0)

Figures in bracket indicates percentage in that category

TABLE 3: Perceived problems associated with producing and selling fish products

Sl. No	Perceived problems	Fast food restaurant		Restaurant		Bar cum restaurant		*Dhaba*		Chat house		Overall	
		F	P	F	P	F	P	F	P	F	P	F	P
1	Lack of awareness about value added fish items by the consumers	13	18.3	2	3.5	31	52.5	13	22.8	-	-	59	19.7
2	Demand for fast food fish item (fish finger, fish cutlet, fish ball, fish pickle) is less due to lack of awareness	63	88.7	63	88.7	46	78	54	94.7	55	98.2	275	91.7
3	Availability of suitable fish species for preparation of fish items is less	35	49.3	48	84.2	27	45.8	37	64.9	3	5.4	150	50.0
4	Irregular supply of suitable species of fish	27	38	49	86	20	33.9	37	64.9	2	3.6	135	45.0
5	More seasonal fluctuation of market price of fish	5	7	16	28.1	7	11.9	21	36.8	-	-	49	16.3
6	Lack of awareness about fast food fish items by the firm	10	14.1	9	15.8	1	1.7	15	26.3	22	39.3	56	18.7
7	Cost of suitable varieties of fish is high	17	23.9	30	52.6	12	20.3	30	52.6	4	7.1	93	31.0
8	Difficult to remove fish bones	12	16.9	3	5.3	11	18.6	8	140	6	10.7	40	13.3
9	Boneless fish are not available like boneless chicken	24	33.8	2	3.5	18	30.5	-	-	7	12.5	62	20.7
10	Less dressing yield of fish (Almost 50%), which cannot be utilized for other food items	11	15.5	-	-	6	10.2	5	8.8	3	5.4	25	8.3
11	Preparation is time consuming	19	26.8	1	1.8	13	22	11	19.3	12	21.4	56	18.7
12	Lack of expertise for preparation of fast food fish items	8	11.3	8	14	6	10.2	6	10.5	9	16.1	37	12.3
13	Fish odour	12	16.9	1	1.8	4	6.8	1	1.8	7	12.5	25	8.3
14	Difficult to keep all the consumer preferred fish	1	1.4	-	-	5	8.5	-	-	1	1.8	7	2.3

NB: F= Frequency and P= Percentage of respondent

Perception of eating joints about consumers choosing fish products

The managers/owners of eating joints were asked about their opinion regarding the probability of consumers choosing fish products (other than fish curry and fry) if they are made available. About 55% of fast food restaurants, 68.4% of restaurants, 67.8% of bar cum restaurants, 63.25% *Dhabas* and 46.4% Chaat houses expressed the possibility of consumers choosing different fish items if they are made available (Table 4). Overall, 60% of eating joints opined that there is a good possibility of consumers choosing fish items if they are made available in their menu.

TABLE 4: Perceptions of eating joints about consumers choosing fish products.

Sl. No.	Types of eating joints	Probability of consumers choosing fish products if they are made available		
		Yes	No	Cannot say
1	Fast food restaurant	54.9	21.1	23.9
2	Restaurant	68.4	5.3	26.3
3	Bar cum restaurant	67.8	16.9	15.3
4	Dhaba	63.2	10.5	26.3
5	Chat house	46.4	14.3	39.2
6	Overall	60.0	14.0	26.0

N.B: Figure indicates percentage of eating joints in that category

Preparation of value added fish products from low valued fish species

Fish species like common carp, grass carp and silver carp are less preferred fish among consumers of Assam. These fishes also fetch comparatively less price in the market. Hence, it was tried to find out the probability of using these low-valued fish species for the production of value added fish items in the eating joints. About 63% *Dhabas*, 60% restaurants, 59% chat houses, 46% bar cum restaurants and 45% fast food restaurants have expressed that low-valued fish may be utilized for value added fish products like fish finger, fish ball, fish bhujia, fish pickle *etc.* The detailed responses of respondents are presented in Table 5. On an average, 54% of eating joints opined that there is probability of utilizing low-valued fish for preparation of value added ready-to-eat fish items. Value addition to farm products can enhance farm income and provide employment in processing businesses which may play vital role for rural growth. Coltrain *et al.*, (2002) also mentioned that value added product development provides excellent opportunities to stimulate economic growth in the rural sector.

TABLE 5: Probability of utilizing low-valued fish

Sl. No.	Types of eating joints	Probability of utilizing low-valued fish for preparation of ready-to-eat/value added fish products		
		Yes	No	Cannot say
1	Fast food restaurant	32(45.1%)	18(25.4%)	21(29.6%)
2	Restaurant	34(59.6%)	4(7.0%)	19(33.3%)
3	Bar cum restaurant	27(45.8%)	20(33.9%)	12(20.3%)
4	*Dhaba*	36(63.2%)	6(10.5%)	14(24.6%)
5	Chat house	33(58.9%)	4(7.1%)	19(33.3%)
	Overall	162(54.0%)	53(17.6%)	85(28.3%)

CONCLUSION & RECOMMENDATIONS

Though there were some problems associated with producing and selling value added fish products as perceived by the respondents of eating joints, the study revealed that there is an opportunity for commercial production and marketing of value-added fish products which will further encourage development of entrepreneurship in this area. Since tastes and consumer habits as well as lifestyles change over time, it is necessary for producers and marketers to understand their market, so as to be able to adapt their products to the changing needs and expectations of consumers. Again, it is necessary to assess up to what extent the consumers are aware about different aspects of a product to be purchased and how far the marketers are able to influence the purchase decision so as to derive optimum value from their production.

As a strategy, production and promotional actions for value added ready to eat fish is suggested as a priority area for development of fisheries sector. To achieve this strategy few measures have been suggested.

- Production of fish having less intramuscular bones suitable for preparation of value added products like fish finger should be encouraged among farmers.
- Department of Fisheries, College of Fisheries and NGOs of the state may come forward in imparting specific training and demonstrations on preparation of value added ready to eat fish products and market intervention of these products. Involvement of woman groups for preparation of value added products can play a significant role in bringing change in this aspect.
- Niche marketing of value-added products can be thought of for creating a need and marketing of these products. In this case, products should be developed through proper market planning by targeting all groups of consumers, especially the low-income groups which are at risk of malnutrition.
- Effective market promotion should be considered which can provide better guide to both the producers and marketers of fish and fish products to produce products of desired quality and good price in the market.

Consumer behaviour on value added fish products should be studied systematically by the marketers and according to the choice and preference of the consumers they should prepare fish products at affordable cost for different segment of population of the state. Such effort in the region is at infant stage. Thus, extended efforts on production and marketing of value added fish and fish products should be given which would help in creation of job avenues for the ever increasing unemployed youth.

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