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Drivers and Barriers to Online Fish Purchase in Kerala, India

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Abstract

Kerala is a predominantly high fish consuming state of India where most fish is still sold through traditional markets, road side stalls and door to door vendors. Reports of unhygienic markets and adulteration in fish have created an increased consciousness about safety and quality standards among consumers leading to emergence of online fish marketing in urban Kerala. The present study attempts to capture the trends in online fish purchase in Ernakulam, Kerala and tries to delineate the contribution of 16 major drivers and barriers affecting online fish purchase among a sample of 97 urban consumers. Conjoint analysis revealed that the factors like 'place of origin of fish', '24x7 accessibility' and 'sensory perception' were the most contributing drivers while 'price of fish' and 'availability of favourite fish' were the most important barriers to online fish purchase in urban Kerala. Online fish retailing is found to establish itself slowly yet steadily in urban Kerala with focus on providing local catch, round the clock access, enhanced sensory and convenience perception for consumers rather than offering price advantage unlike in other e-commerce.

Keywords: Drivers, barriers, online fish purchase, Ernakulam, Kerala

Introduction

Over the world 3.1 billion people depend on fish to meet at least 20% of their total animal protein intake resulting in global per capita fish consumption/year reaching 20.3 kg (FAO, 2020). Consumers perceive fish to be healthy in comparison with other non-vegetarian foods (Brunso, 2003; Gross, 2003). Fish and fish products are considered one of the healthiest options to mitigate hunger and nutrient deficiency and important for a balanced diet (Ivoninskii, 2016; Christenon et al., 2017). Consumption of fish and fishery products supplements local diet in developed and developing countries (Asha et al., 2020; Majagi & Somasekhar, 2020) thus contributing to the nutritional security of people in a better way (Bennet et al., 2018; Murugan & Sivagnanam, 2018).

Fish production in India registered an all-time high of 137.58 lakh metric tons during 2018-19 (DoF, 2020). However, the annual per capita consumption of fish for the entire Indian population is estimated to be very low at 5-6 kg whereas for the fish-eating population it is found to be 8-9 kg (NSSO, 2012). Kerala with a coastline of 589.5 km, amounting to 10% of India's total coastline (DoF, 2017) holds third position in marine landings with 5.44 lakh tonnes in 2019 (ENS, 2020). Kerala has been predominantly reporting high per capita monthly fish consumption rate of 2.26 kg in rural and 2.21 kg in urban areas (NSSO, 2012) and stands second among big states with a per capita fish consumption of 19.41 kg per annum behind Tripura (DoF, 2020). Even though fish consumption in Kerala is always high (Sajeev et al., 2021), increasing cases of adulteration in fish in recent years has created a mounting concern over quality and safety of fish among the consumers. Monitoring studies has proved the cases of adulteration of fish with unapproved chemicals and additives (FSSAI & ICAR-CIFT, 2018).

Different marketing systems arise in different locations due to the prevailing marketing patterns (Lubis, 2019). Problems associated with fish marketing included spoilage during storage; high cost of

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fishing materials and high cost of transportation (Ali et al., 2014; Husen, 2019). Indian consumers are forced to buy fish from unhygienic markets and vendors. Compared to the achievements in fish production, the fish marketing system is very poor and highly inefficient in India and calls for a uniform market policy for fishes so that India's fish production is efficiently managed and delivered to the consumers (Kumar et al., 2008). New drivers and barriers to fish consumption have emerged for quality and safety conscious fish consumers. In this context, online fish marketing has emerged in a big way in urban Kerala (Sajeev et al., 2019).

The rise of e-grocery and advent of new cost-effective freezing technology has led to steady rise of online fish retailing (Vishal, 2015). Online fish selling initially sounded impractical in Kerala where most fish was still sold through traditional markets, road side stalls and door to door vendors. Fish being a highly perishable product, the idea was found too difficult to implement unlike other consumables where online marketing rules the roost. Over the last couple of years, e-retailing scenario changed drastically in urban areas. More than a dozen online fish selling portals are into business and are found expanding their market base (Chandran, 2016). Online fish retailers were able to sell their products directly to buyers minus an intermediary who would take a significant share of their profits (Chan et al., 2021). Online fish selling portals offer a rich variety, mostly made available from local coast. Pre-ordered fresh fish reaches consumers' doorstep in curry cut, steak, fully cleaned or even as whole fish at prices affordable to the discerning homemaker. More than the advantage of price, the focus in e-marketing of fish was claimed to be on quality and safety (Sajeev, 2021). Sustenance of online fish marketing depends on providing fresh and affordable fish to the consumers on time. This distinguishing factor makes online fish marketing an interesting topic of study.

Most initial research on online selling was conducted in the context of US online market (McGovern, 1998; Park et al., 1998; Johanna & Jan, 2000; Morganosky & Cude, 2000; Heilig et al., 2001; Keh & Shieh, 2001). Research on online grocery shopping in India has been limited since this being a relatively new retail channel and almost no scholarly research has been conducted on consumer determinants of local online food purchase in Kerala particularly fish. In the above context, we decided to conduct a study to analyse the profile of online fish selling portals in urban Kerala and their popularity, profile and species preference of online consumers, purchase of fish in relation with other meat online and most importantly to identify the drivers and barriers to online fish purchase in urban Kerala.

Materials and Methods

Ernakulam district of Kerala was identified for the study due to presence of maximum number of online fish vending firms, availability of fresh fish, a predominantly high fish-eating population and an urban population which has high disposable income presumably favouring online purchase of fish (Salim, 2018). A survey instrument was prepared covering major areas like: online fish purchase behaviour, purchase of fish online vs. other meat, portal choice and preferences, drivers and barriers to online fish purchase and socio-economic profile of online consumers. Purposive random sampling was done and 100 traditional fish consumer families and 97 customers purchasing fish online were surveyed during 2019-20. About 15 online fish vendors operating in Ernakulam district, Kerala with comparability in their web portals with respect to their products menu, price range, quality and safety guarantees, delivery systems and consumer accessibility over online, mobile and social media platforms were selected. For maintaining uniformity, consumers of such online fish vendors offering a fully dynamic website with online payment gateway options were only surveyed.

The online fish purchase in relation with that of other meat was measured and estimated in kg. Participants' socio-economic profile was summarized using frequencies and percentages (N, %) for categorical variables and means and standard deviations (M, SD) for continuous variables. Conjoint analysis using regression model with transformation (*'TRANSREG'*) procedure was performed to measure the percentage contribution of determinants of online fish purchase. The variability in the average monthly online fish purchase was decomposed as a function of different qualitative attributes and a numeric utility score was computed for each level of the quality attributes. Finally, importance or percentage utility of each quality attribute was numerically ascertained to see which quality attribute mostly affected the online fish purchase (Green et al., 2004). Statistically, the conjoint model as a function of judgment scores of different quality

attributes was expressed as

$$\phi(Y_{ijk}) = \beta_0 + \beta_{1jk} + \beta_{2jk} + \ldots + \beta_{ijk} + \ldots + e_{ijk};$$

i = 1,2,...13; j = 1,2,..., k = 1,2,...,

where $\beta_{1jk} = \beta_{2jk} = \ldots = \beta_{ijk} = 0$

and $\phi(Y_{ijk})$ is the monotonic transformation of the dependent variable monthly online fish purchase (Y_{ijk}), β_0 is the intercept, β_{ijk} is the regression coefficients of attributes or independent variables, e_{ijk} is the error term. The model was fitted using ordinary alternating least square algorithm (Young, 1981) method using SAS 9.3.

Results and Discussion

An analysis of 15 online fish e-retailers functioning in Ernakulam district, Kerala was made with respect to their products menu, price range, quality and safety guarantees, delivery systems and consumer accessibility over online, mobile and social media platforms. The results revealed that wide range of options provided by online portals was the major attraction for consumers with 3 to 40 fish varieties made available on online platform. The menu offered marine, fresh water and farmed fish and other products like shrimps, squids, crabs and mussels. The online portals focused on convenience and easy availability of variety of products/dressing options (2-8) like whole, whole cleaned, steaks, curry cut, fillets, skinless cubes, marinated, tail-on, peeled, peeled deveined (PD) and peeled un-deveined (PUD) which was hardly possible in case of traditional markets. However, it was found that prices on portals were 30% to 40% more than traditional vendors. Consumers were found to perceive better safety and quality for fish with online sellers. Unlike traditional vending, online vendors provided 2-3 delivery slots in a day along with pre-booking option thus providing great convenience to consumers. All portals studied were found to charge an additional amount between Rs. 29 and Rs. 50 for delivery depending on minimum order limits set by them.

Analysis of consumer accessibility of portals over phone, online and social media platforms were done and results revealed that all online fish vendors had an option of taking orders through phone call and messages and had their own websites. These websites provided complete information on a day's catch and products available. Nearly half (7 out of 15) of the online vendors in the study developed their own mobile apps which instantly notified about stock and special offers. This was found providing maximum consumer reach. Hybrid media marketing was utilised by all the online vendors wherein 'e-mail+website' was the most popular mode adopted closely followed by 'facebook+mobile' mode. Round the clock (24x7) consumer engagement was made possible through dedicated facebook pages by 7 out of 15 vendors studied. This provided latest update about stock position and immediate response to consumers. Online fish marketing through Twitter, Instagram and YouTube were found to be in a very nascent stage with only one, three and two portals respectively utilizing these platforms.

Age, gender, marital status, occupation, education, annual income, religion, city of residence and proximity to local market were the socio-economic factors found as having a positive and significant influence on fish purchase whilst seasonality of fish and the interaction of religion demonstrated a negative and significant influence on fish purchase (Can et al., 2015; Haque et al., 2019; Onumah et al., 2020). Mean age of the online fish consumer in our study was 39 with more than half of the consumers (53%) surveyed falling between 34-44 years of age (Table 1). However, irrespective of age; all members of the families surveyed in Ernakulam were found to enjoy fish with their meal. Majority of the respondents were women (56%) and nearly all of the respondents were married (98%). Half of the families surveyed were large with five or more members and nearly 90% of the respondents were highly qualified with either a graduate (59%) or post graduate degree (33%). Large families also recorded higher fish purchase and consumption thereby spending more amounts on online fish purchase. Purchasing large quantities of fish from traditional vendors and cleaning it at home was a time-consuming job for large families and hence the idea of online fish purchase has found popularity among large families particularly of high-income groups. While majority of the respondents were salaried class working in private firms (55%), nearly one-fourth of them (24%) were also self-employed. Most respondents thus confirmed to have a steady flow of monthly income which was an indicator of successful urban living.

Study of income and expenditure pattern of online consumers gave interesting results (Table 1). Mean monthly family income was found to be attractive

at Rs. 35800/- with majority (41%) earning between Rs. 25000 to 50000. Attractive monthly income of the urban population thus seems to sustain a good expenditure over online fish portals every month. Household income was reported as an important determinant of demand for fish (Gopal & Annamalai, 2001; Gopal & Nair, 2004). Prasad & Madhavi (2014) had reported higher fish purchase in families with high family income. Nearly one-third (32%) of the consumers reported high monthly family income between Rs. 50000 and 100000. Surprisingly, around one-fifth of the respondents (17.5%) reported to be earning very high monthly income of more than Rs. 100000/- per month. It can be understood that consumers with high disposable income were opting for online portals for fish purchase despite the higher price and delivery charges. Study by Shyam (2020) had confirmed that demand of fish in Kerala was enhanced by the high income of consumers. Mean monthly expenditure on food was Rs. 9624/- with almost half of the consumers spending between Rs. 7137 and 12110 on food in a month which was a little more than one-fourth (27%) of their monthly family income. Similarly, consumers reported to be spending Rs. 23814/- as mean monthly living expenditure which translates to two-third (66.5%) of their monthly family income. In nutshell, consumers in urban Ernakulam were earning very high and also were spending high on living and food which lends a good opportunity for online fish portals to extract good business.

On an average, consumers purchased 1.5 kg of fish per online purchase. While majority (49%) purchased two varieties of fish at a time, near same proportion (43%) restricted to one variety of fish/ purchase. Only eight per cent of customers purchased three or more variety of fish online at once. Our study revealed that prawns are the most purchased online in Ernakulam by 61% households @ 1.47 kg/family/month. Sardines (43% households@1.79 kg) and seer fish (41% households@1.85 kg) were the second and third most purchased varieties both in frequency and quantity. Tuna (36% families@1.5 kg) and mackerel (31% families@1.53 kg) followed in the fourth and fifth position. Gross quantities purchased online over a monthly period were recorded as: prawns (90 kg/month), sardines (77 kg), seer fish (76 kg), tuna (54 kg) and mackerel (50 kg) among the 97 consumers in Ernakulam district of Kerala. In a study on fish purchase behaviour of Assamese consumers, Mugaonkar et al. (2011) had found out that majority (84.3%) were species-specific. However, our findings show that in case of online fish purchase, urban consumers of Kerala have purchased more of high value fishes online. The online portals had very good stock of high value fish like prawns, seer fish and pomfret at the same or even lower price than traditional vendors. On the contrary, the price of small pelagic fishes which are frequently purchased by consumers were 25 to 40% higher in online portals. Also, their availability was intermittent and irregular. Thus, consumers found online purchase of high value fish profitable while small pelagic and other fishes were purchased online mostly for convenience and saving time rather than for any price advantage.

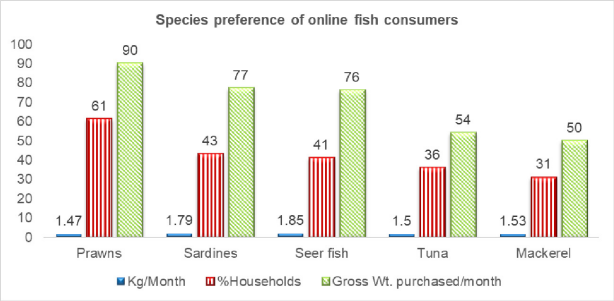

Fig. 1. Species preference of online fish consumers in Ernakulam, Kerala

The results revealed that among the 15 portals studied two portals serve between 59 and 76% of the customers surveyed. Four other portals were found to serve between 10 to 20% of the online customers. All the nine other portals studied were found to reach only 10% of the online fish customers. Interestingly, online customers were found to buy more fish offline through local vendors who had dressing and delivery service. The customers also relied on many sellers who had exclusive Whatsapp groups for selling fish. These sellers on Whatsapp catered to a limited area of service but had a loyal customer base. The study found that popularity of online portals is on the rise in urban Kerala and they are sure to stay as a business model in fish retail. Customers elsewhere in the world were initially reluctant to the idea of online fish purchase (Ghazali et al., 2006). Indian consumers warmed up to the idea of online purchases through the hugely popular e-commerce sites like amazon and flipkart and they have similar positive perception towards online portals selling perishables like vegetables, fruits, meat and fish. The findings of our study underline this and reiterates the vast potential for online fish retail.

Table. 1. Profile of online fish consumers in Ernakulam (n=97)

No.	Factors	Mean	SD	Categories	f	%
1	Age	39.28	11.13	Low (<34 yrs)	26	26.8
				Medium (34-44 yrs)	51	52.6
				High (>45 yrs)	20	20.6
2	Sex			Male	43	44.3
				Female	54	55.7
				Transgender	0	0.0
3	Marital Status			Married	95	97.9
				Unmarried	2	2.1
4	Family Size	4.28	1.04	Small (up to 3 members)	24	24.7
				Medium (4 members)	25	25.8
				Large (5 or more members)	48	49.5
5	Education Level	3.21	0.68	Primary	3	3.1
				Secondary	5	5.2
				Graduate	57	58.8
				Post Graduate	32	33.0
6	Occupation			Farming	0	0.0
				Self-Employed	23	23.7
				Business	11	11.3
				Private Salaried	53	54.6
				Govt. Service	10	10.3
7	Monthly Family Income	35800	8900	<Rs. 10000	0	0.0
				Rs. 10000-25000	9	9.3
				Rs. 25000-50000	40	41.2
				Rs. 50 K-1.0 Lac	31	32.0
				> Rs. 1.0 Lac	17	17.5
8	Monthly Living Expenditure	23814	12329	Low (<Rs. 17650)	30	30.9
				Medium (Rs. 17650-29979)	33	34.0
				High (>Rs. 29979)	34	35.1
9	Monthly Expenditure on food	9624	4973	Low (Rs. 7137)	35	36.1
				Medium (Rs. 7137-12110)	49	50.5
				High (>Rs. 12110)	13	13.4
10	Information Sources	4.35	1.84	Low (up to 3)	40	41.2
				Medium (4-5)	8	8.2
				High (more than 5)	49	50.5
11	Working Status of Spouse			Employed	69	71.1
				Home Maker	28	28.9

Analysis of online purchase of consumers in Ernakulam revealed that families on a monthly average purchase 6.40 kg of fish online compared to chicken (2.86 kg), mutton (0.93 kg), beef (1.33 kg), pork (1.11 kg), duck (1.00 kg) and quail (2.00 kg). To understand the difference in online purchase of fish and meat from that of traditional customers, purchase data from 100 traditional consumers in Ernakulam district were also collected. The results revealed that monthly family purchase of fish and other meat were almost double in traditional channels than of online customers in Ernakulam. Families purchased 13.28 kg of fish per month from traditional markets and vendors while online

purchase quantities accounted for nearly half of that (6.4 kg). This shows the still untapped business opportunity for online fish selling in urban areas. The case was similar with chicken (4.10 kg), mutton (2.12 kg) and beef (2.70 kg) where in the online purchase figures accounted for only half of that of traditional consumers (2.86; 0.93 and 1.33 kg respectively). Difference in purchase profile was observed with pork (1.43 kg) and duck (1.90 kg) wherein comparatively lesser number of shops/ vendors/locations selling those meat has driven the customers to purchase almost near quantities of them online (1.11 and 1.00 kg respectively). Quail meat was found to be purchased online very rarely (2.0 kg). While 68% of online fish consumers purchased chicken online, 23% also purchased mutton, 24% purchased beef and 18% bought pork online. On an average customers spent Rs. 4301 monthly on online purchase of meat and fish while the traditional customers spend Rs. 5097 on these items. Thus, online purchase proved to be significantly costly by almost 25-40% over traditional channels.

Fish buying has become more impulsive in India due to the increased consumption rate (Borah, 2019). Kerala has been predominantly reporting high fish consumption and online fish retailing has successfully established in urban Kerala. To identify the drivers and barriers to online fish purchase in urban Kerala, we employed a 'Transreg' procedure. The analysis revealed that 'place of origin of fish (Inter/ Intra State/National)' (17.9% utility) was the most important driver for online fish consumers in Ernakulam (Table 2). Fish consumers in Kerala are exposed to the positive information on nutritional benefit of eating fish while on the other hand they are exposed to negative news of health risk due to adulteration and unscientific post-harvest management of fish (Rejula et. al., 2021). Consumers in Kerala were wary of large consignments of stale and adulterated fish from other states being sold in Kerala. Several such consignments were confiscated from wholesale markets and vendors. In this context, the online portals came up with the guarantee of fresh catch every day from local waters. This has caught the imagination of the discerning consumers and thus explains the factor 'place of origin of fish' emerging as the most important driver for online fish purchase in Ernakulam.

Option to carry out transactions at any time of the day was another major driver of online shopping (Strauss & Frost, 1999). Not surprisingly, in our study '24x7 market accessibility' emerged as the second most important factor (11.5% utility) driving online fish purchase in Ernakulam. The consumers found immense value in online fish shopping due to the provision of dynamic websites and mobile apps which helped in achieving 24x7 accessibility. The stock position and prices were frequently updated and made available to the consumers thus making it possible to purchase fish at any time of the day sitting in any part of the globe. This could save lot of time for consumers who otherwise has to invest time to go market or fish shop, scout different sellers for their favourite fish and bargain on the price. Around 31% of the online fish sellers in Ernakulam had identified that customers opt for their service mostly because they can save their time (Salim et al., 2018).

'Sensory perception' was identified as the third most important factor driving online fish purchase (10.9% utility). This is a unique determinant identified by our study which otherwise goes mostly overlooked. This factor along with three other factors; 'Convenience perception' (4.7% utility), 'Availability of dressing facility' (0.6% utility) and 'Availability of home delivery' (3.7% utility) could explain nearly one-fifth of importance in explaining online fish purchase. Our study operationalized sensory perception as feel of fish while handling. Cleaning and cooking of fish were a woman's job in most households. With the young generation being averse towards handling and cleaning of fish; sensory perception has emerged as an important driver for online fish purchase. Fish is also treated by many consumers as an inconvenient food item (Gofton, 1995) and convenience has been identified as a major driver in its purchase (Birch et al., 2012).

With most families in urban areas having both the husband and wife working; the process of purchasing, cleaning and cooking of fish is considered as a highly time consuming and cumbersome job. The family members have to visit the market or vendor before or after work hours, select the fish, check for quality, bargain for price and has to find time to get the fish cleaned at home before cooking. The problem of disposing fish waste was another important issue in urban areas. The issue was more important in apartments where the waste from cleaned fish had again to be stored in refrigerator before being handed over to the waste collectors the next day. Thus, the factors sensory perception,

convenience perception, availability of dressing facility and availability of home delivery together act as most important drivers of online fish retail explaining 19.8% utility of importance. Morganosky & Cude (2000) had earlier recorded more than 70% of consumers reporting saving time and convenience as the primary reasons for online purchase.

Wolverton (2000) had noted the growing need for speedy home deliveries in online purchases. Consumers expect speedy delivery for perishable products because most do not always plan their meals that ahead in a day (Keh & Shieh, 2001). Consumers responding to our survey expected more speedy deliveries from online firms because they cannot plan a meal today and see that the portal has a delivery slot for the next day only. The urban family schedules are hard to predict, especially for time-starved families or households with children and older parents. This response reiterates the emergence of 'availability of home delivery' as another important driver of online fish purchase.

'Price of fish' acted as the biggest barrier for online fish purchase as perceived by consumers. The online customers surveyed accorded 13.3% utility of importance for this single factor which is presently acting as a barrier. The average retail fish prices were very high during the study period at around Rs.175/kg. Average fish retail prices online were not less than Rs.225/kg for cleaned fish. Thus, price of fish online was not favourable for most of the families for sustained online purchases even though benefits of convenience and quality were clearly evident. Price of fish was found to act both as a driver and barrier according to fluctuations in fish price. Affordable price was found to increase fish purchase and consumption in several parts of India (Prasad & Madhavi, 2014; Bhuyan et al., 2017). Olsen (2004) found price not a barrier in seafood consumption while Birch et al. (2012) identified that price fluctuation acted as barrier for fish purchase and consumption. With price of fish sold online in Ernakulam being 30-40% higher than that of traditional markets and vendors, the online retailers will surely find it hard to gain customers from middle income and lower income groups who form the major chunk of fish consumers in Kerala. Apart from the above factor, location specific sellers using Whatsapp for fish selling have emerged in large numbers and are going to give a tough competition to established fish e-tailers with their significant price advantage and express delivery services.

'Knowledge of fish recipes' (9.1% utility) emerged as the fifth driver of online purchase. Kerala being a predominantly high fish consuming state, knowledge of several unique fish recipes has been passed over through generations. These lip smacking fish recipes has become part of the Kerala cuisine and culture. Added to this, high exposure of young generation consumers to several cookery related channels over social media has led to an increased desire to try and relish international fish recipes. In contrast to the traditional vendors who just sell fish as it is or may clean the scales and viscera, the online vendors provide two to eight variety of products and dressing options like whole, whole cleaned, steaks, curry cut, fillets, skinless cubes, marinated, tail-on, peeled, peeled deveined (PD) and peeled undeveined (PUD) all of which are hardly possible in case of traditional markets. Availability of cleanly dressed different products as mentioned above boosts the opportunity for cooking enthusiasts to try their knowledge of several unique local as well as international fish recipes.

'Availability of special/combo offers' (7.5% utility) was the sixth most important factor found to drive online purchase of fish. Such special and combo offers were never heard of nor available with any traditional vendors. Offers such as weekend sale, flash sale, happy hours and special occasion/ holiday/festival sales were introduced in fish retailing by online fish sellers which became instant hit with consumers of urban Kerala. Discounts in total price while availing combo offers was another major attraction driving the online fish purchase.

Health benefits, palatable taste and nutritive value of fish were well identified as the major drivers of fish purchase and consumption (Birch et al., 2012; Prasad & Madhavi, 2014; Bhuyan et al., 2017). 'Health benefits' (7.3% utility) of eating fish was identified as another major driver of fish consumption for consumers in Ernakulam. Keeping in line with the high educational attainments and literacy of Keralites, the urban population of Ernakulam was found to have good knowledge about health benefits of eating fish. Health concerns were identified as a major factor affecting consumer preferences (Roininen et al., 2001; Vannoppen et al., 2002). Around 80% of the respondents in our study opted for marine fish as their first choice over freshwater fish. Wide choice of fresh water fish on online fish retailing portals in contrast with consumer choice thus explains the factor 'source of fish' (5.6% utility)

emerging as an important driver of online fish purchase in Ernakulam which needs to be addressed for achieving better business volumes.

Websites of major fish e-retailers have started giving nutritional information on fish sold, except the information related to traceability. Consumers in our study were of the opinion that since no vendor provides exact information on origin of fish and days from 'catch to kitchen/net to plate' data they don't find 'Information on Fish sold online' as a major factor thus explaining its low contribution to online purchase (3.5% utility). Due to wide advertisement and various catchy slogans like 'as good as live' and 'as fresh as it can get' used by online fish sellers; urban consumers perceive better safety and quality with fish sold by them. 'Safety of fish' (2.8% utility) and 'Quality of fish' (0.1% utility) has thus found to be taken as guaranteed by online customers. Concerns regarding safety and freshness had always acted as barriers for fish purchase (Mugaonkar et al., 2011; Birch et al., 2012; Prasad & Madhavi, 2014). Study by Geethalakshmi et al. (2013) estimated that there exists willingness to pay 10-15% more for best quality fish which can explain customer willingness to buy fish online paying a premium price.

Mugaonkar et al. (2011) found majority of consumers species specific while buying fish. 'Availability of favourite fish' (1.3% utility) was found acting as a barrier to online fish purchase in urban Kerala as

Table 2. Drivers and barriers to online fish purchase and consumption (n=97)

No.	Factors	Utility		
	Intercept	16.327		
		Importance (% Utility Range)	Rank	Driver(+)/ Barrier(-)
1	Price of the fishes	13.264	2	Barrier(-)
2	Availability of favourite fish	1.256	13	Barrier(-)
3	24x7 accessibility	11.456	3	Driver(+)
4	Health benefits	7.297	7	Driver(+)
5	Safety of fish	2.784	12	Driver(+)
6	Quality of fish	0.049	16	Driver(+)
7	Convenience perception[1]	4.646	9	Driver(+)
8	Sensory perception[2]	10.902	4	Driver(+)
9	Knowledge of fish recipes	9.098	5	Driver(+)
10	Place of origin of fish[3]	17.883	1	Driver(+)
11	Source of fish (marine/freshwater)	5.564	8	Driver(+)
12	Production method (capture/farmed)	0.576	14	Driver(-)
13	Information on Fish sold online	3.482	11	Driver(+)
14	Availability of dressing facility	0.561	15	Driver(+)
15	Availability of home delivery	3.689	10	Driver(+)
16	Availability of special/combo offers	7.492	6	Driver(+)

1. Easiness of waste management and fish ready to cook
2. Feel of fish while handling
3. Inter/Intra:State/National

The standard errors are not adjusted for the fact that the dependent variable was transformed and so are generally liberal (too small).

Root MSE:1.60547	Dependent Mean: 6.40206
R-Square: 0.9354	Adj. R-Square: 0.8831
Co-eff. Var.: 25.07741	Monotone (PURCHASE): Algorithm converged.

perceived by customers. Guaranteed availability and affordability of the most favourite fishes in Kerala; sardine, mackerel, anchovies and pink perch; were poor on major online fish selling portals. Hence, the factor is found acting as a barrier to online fish purchase. Online sellers should concentrate on small pelagic and nutritious fishes rather than big ones to cater to the palate of Kerala consumers and reap a bigger share of fish retail business.

Online marketing is a dynamic process that is constantly evolving and changing all over the world including India. Online fish retailing came up in a big way recently in urban Kerala and is found to have gained consumer acceptance. With unmatched consumer accessibility through web, mobile and social media platforms and options for wide range of products and home delivery systems, online fish portals have shown potential to garner larger share of fish retailing in urban Kerala. The study captures the trends in online fish purchase in urban Kerala and tries to delineate its major drivers and barriers. With focus on providing local catch, round the clock access and enhanced sensory and convenience perception for consumers, online fish retailing is here to stay and flourish. High price of fishes and low availability of Kerala's favourite fishes are grey areas which need correction in online fish retailing. Conclusive studies need to be taken up to prove capability of online fish retailing to disrupt traditional fish marketing in the long run.

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