NUTRIENTS FOR ALL

Market Research for Rice Fortification Retail Market Strategy

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ACRONYMS & ABBREVIATIONS

BDT	Bangladesh Taka
BINA	Bangladesh Institute of Nuclear Agriculture
BRRI	Bangladesh Rice Research Institute
COD	Cash on Delivery
CSR	Corporate social responsibility
FR	Fortified Rice
FAFH	Food away from home
FRK	Fortified rice kernel
FSSAI	Food Safety and Standards Authority of India
GAIN	Global Alliance for Improved Nutrition
GOB	Government of Bangladesh
HIES	Household Income and Expenditure Survey
HSC	Higher secondary certificate
KG	Kilogram
LSD	Local storage depot
MFR	Micronutrient Fortified Rice
MMT	Million metric ton
MT	Metric ton
NPNL	Non-pregnant and non-lactating
PR	Public relations
RFCC	Rice Fortification Coordination Committee
RFP	Request for proposal
RMS	Retail Market Strategy
SKU	Stock keeping unit
SSN	Social safety net
TOR	Terms of reference
WFP	World Food Programme

Conversion rate used: 1 USD = 85 Bangladeshi taka

EXECUTIVE SUMMARY

The Government of the People's Republic of Bangladesh has placed increasing focus on food fortification as a proven, cost-effective measure against micronutrient malnutrition. The 8th Five-Year Plan mentions promotion of micronutrient fortified food grains and 'Pushti Chal' with private sector engagement (pg. 734). One of the more promising initiatives in this regard has been rice containing micronutrient kernels.

Branded as 'Pushti Chal' or 'Puṣṭi Chāl', meaning 'nutritious rice', this fortified food staple is being distributed among relatively underprivileged segments, under national social safety net programs.

The United Nations World Food Programme (WFP), in partnership with Nutrition International, and the Global Alliance for Improved Nutrition, ran a pilot campaign to gauge consumer reception and acceptance of the product.

Now, the product will be branded and offered to consumers at large. To this end, this study has been carried out to collect supply and demand data – with the goal of developing value-chain maps and strategies for retailing fortified rice.

About 60% to 70% of rice yields are processed for retail consumption. As a commoditized category, the rice market is fragmented and not significantly influenced by any large market actors. On the contrary, consumers wield a lot of power over the category. It is ill-advised consumer preference that has brought highly milled and polished white rice to a dominant role.

Bangladesh alternates between first and second places in the list of countries with highest per capita rice consumption. For 2020-21, the Food and Agriculture Organization gives annual per capital consumption of 181 KG. However, there may a general reluctance to own up to the large amount of rice consumed by Bangladeshis. When shown images, participants were much more likely to associate with rice portions around 100-125 grams, whereas average daily consumption currently stands at 500 grams, or half a kilogram of rice.

Polished, fine-grain white rice seems to carry status connotations, where increasing income is typically associated with shifts towards fragrant, fine-grained rice. Coarse rice is characterized as 'filling' and usually suitable for low income families or domestic helpers in wealthy families.

The typical household consumes around 40 KGs of rice per month. Kataribhog, Nazirshail, Miniket, and BRRI Dhan28 are some popular breeds of rice. Overall, consumers know of popular rice varieties, their respective characteristics, and market prices. Household stores usually contain three to four varieties of rice: for family, for domestic helpers, and for special occasions and dishes.

This is a critical insight since it provides marketers with vital windows for engaging consumers, by positioning fortified rice as a specialty product. That is to say that fortified rice will have the chance to co-exist alongside a dominant staple variety of rice – serving some special functional or emotional need.

The reason why such windows are needed to enter consumer households is because 100% of households reported having not changed or experimented with the traditional variety (breed) of rice consumed in their homes. As much as consumers seem to enjoy variety in daily flavors and combinations – they rely on their rice to act as the ever-familiar constant that anchors their daily meals in the familiar fabric of ancestral traditions.

In general, respondents believe that rice quality has deteriorated over the past decades. They attribute this perceived devolution to reckless farming practices, e.g. use of toxic, chemical fertilizers.

There was no mention of the harmful effect of over-polishing or excessive milling of rice – intended to make grains appear white, shiny, and slender. Most rice is bought from open-air markets, and look and texture are important qualities that consumers consider. This suggests that see-through slits or windows in product packaging, and loose product samples will be needed to appease demanding consumers.

The study further finds that brands like ACI Pure or Teer command little consumer loyalty in this category. Advertising messages and retailer recommendations also play no role in informing or shaping rice purchase decisions.

Knowledge of micronutrients – and especially of the terms ‘micronutrient’ and ‘fortification’ is low. Though all households buy iodized salt, they do not realize that the salt is fortified too. Fortified oil and milk powder are present in many urban households as well.

Households paying premium prices for fortified foods demonstrate grasp and appreciation for the added benefits. For this reason, these households have been clustered into a potential segment for fortified rice. The other potential segment is comprised of those who bought fortified rice during the 2020 pilot campaign.

However, when it comes to additives to products, consumers may also be wary. One interviewee from Dhaka opined that all products in the market now claim to contain rare and excellent additives, in order to bait consumers. One summative expression from her stands out:

> “Everything contains something.”
> - Housewife, Dhaka Urban

This points towards the need for marketing and promotions that help to verify brand claims, e.g. through product demonstrations or highlighting tangible outcomes. Such activities can also contribute to the primary marketing objective of ‘Generating Trial’. That is to say: in the initial period, a fortified rice brand must concentrate on entering as many households as possible, even if in low volumes and few repeat customers.

This tactic is the opposite of targeting a limited number of select, high-value households with a view to generating revenue streams.

The retail market strategy firstly concerns itself with delivery-models, which lay down how fortified rice will be produced, and under what system of market incentives. Three delivery-models are developed in this section: the first is implemented entirely by corporate rice marketers like ACI and PRAN. These corporations have most necessary means to market fortified rice and drive sales.

The second model shows fortified rice being produced through a network of small and medium –sized millers (called ‘SME Millers’ for short). Since these actors do not own established and recognized brands, they may be persuaded to obtain rights to a central, franchise brand.

The third delivery-model utilizes a hybrid approach, with corporate marketers utilizing existing milling and blending capacity of SME Millers through sub-contracts and buyback contracts. This model enables all involved parties to concentrate on their core area of expertise.

A brand strategy is developed next, illustrating how micronutrient (functional) benefits can be ontologically extended to enable consumers to connect with the brand. Cues are provided for development of branded content, e.g. frequently asked questions, short ‘fortified rice’ write-ups etc. General recommendations follow next, providing inputs as to how brand credibility may be enhanced.

The last section of the retail market strategy discusses timing, seasonalities, and scale of operations. In a section about operationalizing the strategy, it develops a ‘pitching deck’ consisting of proof of concept, scientific data, consumer trial results, segment valuations, business case, financial modeling, delivery-models, industry linkages, and other items needed to provide a smooth entry to corporate marketers and small or medium millers into the retail business of fortified rice.

HOW THIS REPORT FLOWS

1 PREAMBLE & METHOD

Provides the background to the research, lays out the objectives, and summarizes research methods. Methodology details are available in the annexure.

2 MARKET SYSTEM & VALUE CHAIN

Features overview of the rice category, and key market actors. Second part develops the value-chain map for fortified rice.

3 SUPPLY-SIDE ACTORS

Provides the background to the research, lays out the objectives, and summarizes research methods. Methodology details are available in the annexure.

4 DEMAND-SIDE ACTORS

Presents quantitative survey findings, uses findings to define two potential target segments and their valuations.

5 RETAIL MARKET STRATEGY

Synthesizes study findings, value-chain map, secondary data and expert opinions to develop delivery-models, brand strategy and outlines of a retail marketing effort.

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CHAPTER 01
PREAMBLE & METHOD

Around 5000 years ago, Austroasiatic-speaking migrants trudged out to the lush valley of the Lōhita River, not far from present day Sirajganj or Bogura. These migrant tribes – some of the first to set foot upon these lands – brought their own language, myths, music, tubers, cucurbits, and crucially, rice.

Thus ancient Bengal was fated to become one of the early centers of rice cultivation and propagation.

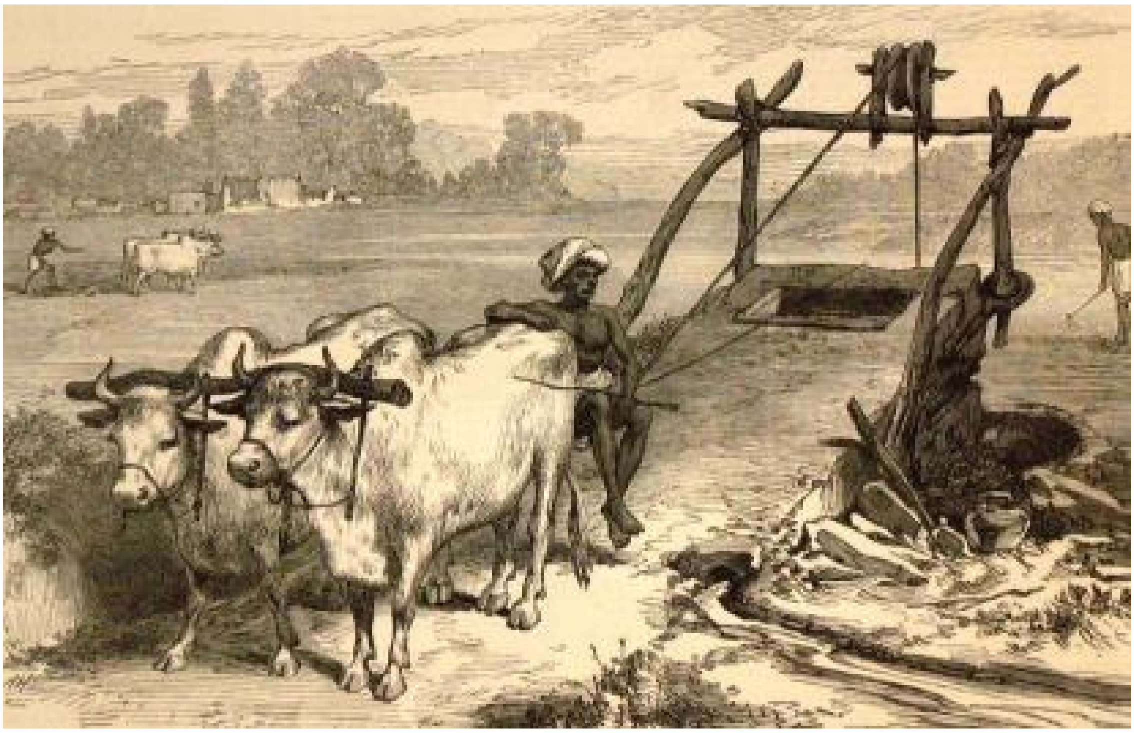


Image: Internet

Like no other, 'rice' has been seminal and instrumental in the development of civilization on this stretch of the Ganges delta.

The history of rice and Bangladesh stretches back to the hoary past. Naturally, there can be no emphasizing how central the crop is to the peoples, trades and cultures of this region. For millennia, rice has been offered to teething infants, deceased ancestors, and omnipotent deities alike.

Till this day, the Bangla New Year is welcomed with water-soaked rice, in remembrance of a time-honored tradition of humble means and frugal living. With this brief tribute, we return to modern times in search of an entirely new way of putting rice to use for the greater good.

1.1 Background

Bangladesh's transition towards a modern rice farming regime gained momentum around the early 1960s and stretched well into the late 1990s. As of 2021, annual rice production in Bangladesh stands at an impressive 340 million tons, placing the country fourth among the top rice producers.

Despite making significant strides in poverty reduction over the last four decades, rates of malnutrition in Bangladesh are among the highest in the world. Almost a quarter of its population of 160 million lacks food security, 10 million face acute hunger and Bangladesh also has a high child undernutrition rate.

The World Bank estimates that micronutrient deficiencies can cost countries up to 5 percent gross national product due to negative impact on productivity.

For Bangladeshis

77%

Caloric intake comes from milled rice

Rice Fortification

Milled rice is the unrivaled staple food for Bangladesh. It represents seventy-seven percent (77%) of the average person's daily caloric intake. As such, it is also the obvious candidate for countrywide micronutrient delivery through fortification strategies.

For these reasons, the Government of Bangladesh has adopted rice fortification as one approach to reduce the prevalence of malnutrition, especially among women, children and adolescents across rural and urban populations in the 2015-2024 National Strategy on Prevention and Control of Micronutrient Deficiencies.

An acceptability trial conducted by the BRAC and WFP in 2014 confirmed acceptability of fortified rice amongst social safety net programme participants. This provided robust evidence for the Government to expand the distribution of fortified rice to other social safety nets. WFP is also investing in innovative approaches to raise awareness and increase demand for fortified rice among the wider population in rural and urban areas.

For example, the national Rice Fortification Coordination Committee (RFCC) has approved and endorsed a television commercial on fortified rice, which was broadcasted across private and national channels. The commercial helps to raise awareness of fortified rice among the general population, thereby supporting the gradual process of commercialization. Full-fledged commercialization is the next critical step and ensuring availability at an economical price to rural and urban population in the commercial market will help reach scale.

1.2 Research Objectives

The market research study aims to find the scope for introducing fortified rice in retail shops and identify the methods of changing consumer buying pattern. Specific objectives of the study include:

- Identify the key market segments (income, demographic profile that will to help identify who to target in those segments when it comes to marketing); current trends with respect to rice purchase (at household level) and consumption (at individual level).
- Determine the different consumer segments' awareness, acceptability/ likeness, motivation (willingness to pay) and influencers/ factors that influence (e.g. perception of health benefit, packaging, taste, advocacy by social influencers, or other) that drives decision to purchase fortified foods instead of conventional equivalents (e.g. fortified rice instead of conventional rice).
- Identify the awareness and incentives of retail outlets to stock the fortified foods with potential to serve the demand of the identified consumer segment (number of potential retailers, their location, customer outreach, capacities etc.)
- Mapping of the rice (fortified and conventional) value chains, examine and estimate the capacity of the supply/production potential to serve the selected market segment; identify price mark.

1.3 Methodology

This study has two major outputs: i) Value Chain Analysis, and ii) Retail Market Strategy and Brand Strategy. The former benefited from interviews and consultations with sector experts and market actors, while the latter relies largely on a quantitative consumer survey.

1.3.1 Value-Chain Analysis

To ensure that our findings are connected to the ongoing and the future works of WFP, investigation/ value chain analysis was started by mapping the backward and the forward chain for the current fortified rice producers (millers). Their efficiencies in input access and market distribution were assessed through qualitative methodology. Their challenges in sourcing, processing and marketing was evaluated and based on the primary findings backward and the forward market chain was assessed.

1.3.2 Retail Market Strategy

To develop the retail market strategy, this study includes a consumer survey to develop and understand customer segmentation. Segmentation means breaking a population into smaller groups for the purpose of identifying, prioritizing and serving the group(s) that accelerate goal achievement.

1.4 Research Design

1.4.1 Qualitative Sample size

The study team conducted key informant interviews (KII) and in-depth interviews (IDIs) with the rice millers, retail outlets, modern trade, kernel producers, blenders, local government officials and other stakeholders to the unfortified and fortified rice production – all together 82 KII & IDI was conducted across Sirajganj, Natore, Bogura, Tangail, Jamalpur, Narshingdi, Munshiganj, Gazipur, Cox's Bazar, Madaripur and Dhaka districts.

The study team visited Dhaka, Sirajganj and Naogaon districts to conduct interviews with the key stakeholders. Due to the ongoing COVID crisis, some of the interviews were conducted over online meeting platforms (e.g- Zoom, Google meet) and over telephonic calls. The following table details the sample size for the qualitative assessment for the study:

Market Actors	District Sampling	
	Dhaka	Sirajganj / other
Rice Millers (Blending only)	4	3
Unfortified Rice millers	4	6
Wholesalers & Retailers	12	12
End Consumer	20	12
Kernel producing millers	-	3
Kernel producing companies	2	-
Paddy Supplier	-	2
Machinery Supplier	-	2
Supermarkets, and branded rice marketers	3	-
Government official	1	
FRK testing facility	1	-
Local government officials	0	2
Other stakeholders	5	-
Sub-total	**44**	**42**
Total		**86**

Table 1: Sample size for the qualitative assessment

1.4.2 Quantitative sample size

The total sample size of the consumer survey is 640. The total population was distributed between Dhaka and Sirajganj districts. The sample was further segregated among different (Gender, locality and monthly income) criteria. The following table details the segregation of the sample size of the survey:

Segregation		Sample distribution	Total
Districts	Dhaka	505	640
	Sirajganj	135	
Gender	Male	236	640
	Female	404	
Locality	Rural (central)	46	640
	Rural (deep)	16	
	Semi-urban	6	
	Semi-urban (Central)	188	
	Urban high-income zone	12	
	Urban metro	369	
	Urban slum	3	
Monthly Income	**BDT 5001 – 6000**	1	640
	BDT 6001 – 8000	2	
	BDT 8001 – 10,000	12	
	BDT 10,001 – 12,000	11	
	BDT 12,001 – 20,000	78	
	BDT 20,001 – 32,000	154	
	BDT 32,001 – 48,000	154	
	BDT 48,001 – 60,000	82	
	BDT 60,001 and above	146	

Table 2: Sample distribution of quantitative consumer survey

The survey was conducted following a set of guidelines to ensure safety protocols during the ongoing COVID crisis. The protocol is attached as annex of this report.

1.4.3 Data Analysis

The study team applied a mixed method research design, where both qualitative and quantitative primary data was collected and analyzed, and compared to secondary datasets.

Quantitative and qualitative data is grouped under similar headings and/or analytical categories for stronger, internal validity and ease of perusal. Analytical categories have been compared internally using quantitative and qualitative data, to derive further insights.

Interpretations have been drawn from certain types of market signals as well. For example, in generating a 'Heat Map' identifying potential zones of opportunity – locations of commercial bank branches have been used as a proxy indicator for robust economic and financial activity.

The retail market strategy was focused on the quantitative survey on the consumers, whereby the value chain analysis will rely on qualitative data collected from the various chain actors. Data collected through both the methods was triangulated to develop the final output of this study.

1.5 Study Limitations

The study was carried out with urban and semi-urban participants from middle and upper tiers of the socioeconomic class, mainly in two districts. Apart from the relatively narrow geographic scope, the sheer magnitude of the megacity Dhaka has made it impossible to draw comparisons and parallels between the two locations.

Dhaka – especially the metropolitan area – is a sprawling megacity, populated by nearly 17 million people. It is characterized by ultra rich colonies and ghettoized slums alike. As the commercial hub, the administrative center, and the former being the capital, a ‘Megacity’, and home to large migrant and floating populations, and large markets characterized by

A drawback of this study is that it has not drawn evidence from its own acceptability study, as it is not within the defined scope of work. Therefore, moderate levels of consumer satisfaction are assumed.

In the fortified rice value chain, the millers are at the core as fortified rice is being produced at the mill level by mixing kernels to rice. As such, in this study, the forward and the backward chain was defined from the perspective of the millers but not from the perspective of the rice farmers.

There are indications that the pandemic period has introduced subtle changes in people’s diet (e.g. wealthier segments are buying more rice). The nature of these shifts cannot be ascertained at this point – but there is the likelihood that consumption will return to normal once normalcy comes to prevail.

Thirdly, no consumer acceptance test was conducted as part of this study. Therefore, assumptions are drawn from the WFP-BRAC joint acceptability study, and the market assessment conducted by Quantum Consumer Solutions Limited in 2017.

Lack, or dated nature, of published demographic and consumption data raised considerable challenges during the analysis stage. Updated national datasets on household income, expenditure, retail habits, and media-related themes could have lent greater latitude to the analytical framework.

CHAPTER 02

MARKET SYSTEM & VALUE CHAIN

2.1 Rice Cultivation in Bangladesh

There has been more than three-fold increase in rice production in Bangladesh since independence from nearly 10 million MT in 1971-72 to about 38.70 million MT in 2020-21. (The Financial Express, 2020).

Bangladesh agriculture involves food production for 163.65 million people from merely 8.75 million hectares of agricultural land (M U Salam, 2014). Rice is the staple food of about 135 million people of Bangladesh.

Rice provides nearly 48% of rural employment, about two-third of total calorie supply and about one-half of the total protein intake of an average person in the country.

Rice sector contributes one-half of the agricultural GDP and one-sixth of the national income in Bangladesh. About 75% of the total cropped area and over 80% of the total irrigated area is planted to rice. (BRKB).

2.1.1 Combined Efforts

The continuous growth in rice sector has been possible largely due to combined efforts of farmers, rice scientists, extension personnel and Government of Bangladesh. Since the 1970s Bangladesh Rice Research Institute (BRRI) and Bangladesh Institute of Nuclear Agriculture (BINA) have conducted research and have successfully released several varieties of rice seeds, which accommodate the agro-ecological conditions.

The two rice research institutes have made high yielding varieties available to farmers. Thus farmers are inclined towards cultivating the new variety of rice which promises profitability. In Bangladesh 15% of the rice produced is hybrid rice. Rice is produced in three seasons: Aus, Aman and Boro.

The Aus rice is seeded during March to April, rain fed in the pre-monsoon shower and harvested between July and August. The Aman varieties are rain fed during the monsoon season. They are directly planted in March and April or transplanted between July and August.

Both types of Aman rice are harvested during November to December. This type of rice is prevalent along the coastal areas. Lastly, Boro varieties irrigated and seeded during December to early February and harvested between April and June.

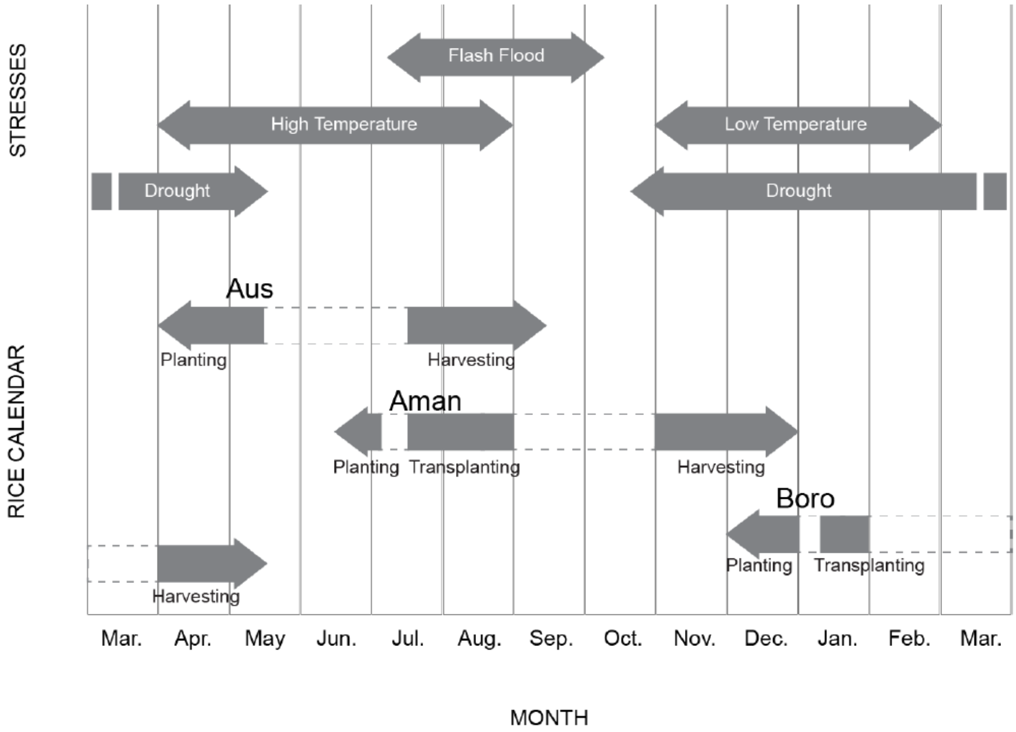


Figure 1: Rice production and harvesting season in Bangladesh

According to Global Agricultural Information Network, the total area under rice cultivation in Bangladesh is about 11.8 million hectares (Global Agricultural Information Network, 2019).

According to FPMU the total rice production stands at 36.61 million MT in FY 2019-2020 with 2.76 mmt of *Aus*, 14.20 mmt of *Aman* and 19.65 mmt of *Boro* production (Bangladesh food situation report, volume 123).[1] The total rice production from 2017/18 to 2019/20 is presented in the following table:

Variety	**2017/2018**		**2018/2019**		**2019/2020**	
	Area under cultivation (Ha)	**Production (MT)**	**Area under cultivation (Ha)**	**Production (MT)**	**Area under cultivation (Ha)**	**Production (MT)**
Aush	1,075,061	2,709,643	1,105,328	2,775,478	1,095,188	2,755,396
Aman	5,679,456	13,992,874	5,621,949	14,054,872	5,559,964	14,203,197
Boro	4,859,367	19,575,819	4,788,276	19,560,546	-	-

Source: bbs.portal.gov.bd

Table 3: Area under cultivation and total rice production in Bangladesh

2.1.2 Rice Varieties

At present, there are 81 rice varieties in Bangladesh developed and released varieties by the state-run rice research body. Among them, there are 25 Boro, 36

[1] http://fpmu.gov.bd/agridrupal/sites/default/files/FSR_123.pdf

Aman and 10 Aush varieties. In addition, another 18 varieties has been developed by Bangladesh Institute of Nuclear Agriculture (BINA) since its inception. However, the most popular rice varieties among the farmers are two Boro varieties, namely- BRRI Dhan 28 and BRRI Dhan 29 with an adoption rate of 40.14% and 28.51% respectively.

Other popular rice varieties are: Aman BRRI Dhan 11 with 11.6% adoption rate, Aman BRRI Dhan 49 with 11.07%, Aush BR 26 with 8.75%, Aush BRRI Dhan 48 with 7.84%, Aman BRRI Dhan 28 with 7.26%, Aman BRRI Dhan 32 with 4.13% and Boro BR 16 with 3.71% adoption rate. However, during Aush season, a significant portion of paddy farmers prefer cultivating BRRI Dhan 28, which is a Boro variety: nearly 21% farmers choose this Boro variety over Aush varieties (Siddique, 2016).

Among the varieties, BRRI Dhan 29 has the highest yield at 7.5 tons per hectare. This is followed closely by BRRI Dhan 28. BRRI Dhan 28 is suitable for flood prone regions as it is submergence tolerant. BRRI Dhan 29 has been designed to be leaf and sheath resistant which helps to lower crop loss.

Rice type	Crop duration (days)	Yield (t/ha)	Special Features
BRRI dhan28	140	5.0 -6.0	The duration is 3 weeks shorter compared to BRRI dhan29. This makes the variety convenient to harvest in flood prone regions where matured paddy may get submerged with the onset of the rainy season.
BRRI dhan29	160	7.5	Leaf and sheath blight resistant
BRRI dhan50	155	6.0	Aromatic
BR23	150	-	It is photosensitive. It can be planted late in the Aman season and has satisfactory yield compared to other Aman varieties. This variety is preferable in the southern region as it can be planted late and can withstand moderate salinity.
Binadhan-7	110-120	5.0-5.5	More resistant to leaf, sheath blight and stem rot compared to other Aman varieties. It matures early and allows farmers to plant other crops after harvest.
BRRI dhan49	135	5.0	It is non-photosensitive. Field findings revealed that farmers are facing problems as the variety is susceptible to false smut.
BRRI dhan34	135	3.5	It is an aromatic variety which has nearly double yield compared to local aromatic varieties.

Table 4: Characteristics of some rice varieties[2]

[2] Rice output market assessment study, conducted by Innovision Consulting Private Limited in 2016.

BRRI Dhan 50 and 34 are aromatic varieties. BRRI Dhan 50 is known as *Banglamati* as it resembles the imported Basmati rice. BRRI Dhan 34 has medium yield (3.5 t/ha). However, this variety is not photosensitive and has lower level of insect-pest tolerance. Bina Dhan-7 has the shortest duration of maximum 120 days and relatively high yield (5 t/ha)[3]. The following table presents some characteristics of some of the popular rice varieties of Bangladesh.

2.2 Category Overview

The category of a product, depending on the definition, implies a broader, market-assigned class of market offerings that said product belongs to. Example of a chain can be: [Personal Care] →[Oral Care] → [Toothpaste] → [Pepsodent] – with these representing category, sub-category, product, and brand respectively.

> In this context: the 'product' in the context of this report is Micronutrient Fortified Rice (FR). It is an industrially fortified food product, with proven benefits and global success stories.

MICRONUTRIENTS IN FORTIFIED RICE		
▪ Vitamin A	▪ Vitamin B12	▪ Iron
▪ Vitamin B1	▪ Folic Acid	▪ Zinc

GAIN (2018) reports that about 60% of rice in the country is set aside for the retail market, with portions of the remainder going to on-farm consumption. About 90% of retailed rice is parboiled rice, and the market's current dynamic is moving towards high preference for milled and polished white rice. Rice is retailed via an interconnected, overlapping and complex value chain, featuring actors like farmers, middlemen, millers, wholesalers, and retailers.

In Bangladesh, It is the consumers whose choices shape how suppliers are to meet such demand. This may be labeled what is called a 'Buyers' Market' in lay terms.

Consumer demand, especially in middle to high income segments, is largely geared towards fine grain varieties. Whiteness and polish are often equated with high quality.

> *The Bangladeshi rice market is predominantly demand-driven. Upstream value chain actors react to perceived consumer demand and preferences rather than attempting to proactively shape them. Because of this challenge, consumers do not demand zinc rice, and millers and aggregators have no incentive to create zinc rice products.*
>
> (Dalberg / GAIN 2018)

In this commodity market with slim margins, rice-millers have low or no capacity to shape consumer preferences.

[3] Rice output market assessment study, conducted by Innovision Consulting Private Limited in 2016.

Finer grain, e.g. Bashmati rice is in high demand in North Bengal. Whereas, in Barishal, coarse rice is more popular.

In January 2021, the Government of Bangladesh (GOB) began import of Swarna-5 variety (short grain, white rice) rice from India at USD 356 per ton, with a view to steadying domestic price levels.

In this context, the product category is 'milled and packaged rice', with a focus on urban to semi-urban, medium to high -income segments.

Why is the Category Crucial?

In marketing, the category is the basic frame of reference underlying strategy formulation, competitive tactics and brand positioning.

If the category is defined as 'all commodity grains' then the product is positioned against a vast market-space and consumption horizon, populated by a variety of competitors, and large segments with many options.

If the category is defined as 'value-added packaged white rice' – then the product is pigeonholed into an excessively narrow niche, associated with low competition, but also smaller target segments.

Looking back at the pilot, retailers report seeing demand for some time 'at the beginning' (indicating the pilot period). But this nascent demand has since returned to pre-pilot levels, i.e. virtually zero demand. Therefore, there must be a link between ongoing awareness / reminder activities and demand for brand.

Rice, as the overwhelmingly dominant food commodity, holds a unique position in the Bangladeshi market. Stock or expected yield of rice is a key metric for assessing food security. From a macro perspective, rice is the most critical and sensitive food commodity sector in Bangladesh.

2.3 Current Status of Rice Fortification

At present, fortified rice is primarily produced and distributed through the Government's social safety net programs. The Government of Bangladesh and the World Food Programme has initiated the incorporation of fortified rice in social safety net programs in 2013. The initiative was started with 2 sub-districts of Sirajganj upazila and with 30,000 beneficiaries.

By 2020, a total of 236 sub-districts were included in the initiative and more than 5 million social safety net (VGD, FFP and school feeding program) beneficiaries were brought under the initiative (WFP). 'Ministry of Women and Children Affairs' select the sub-districts where the fortified rice are to be distributed. VGD and FFP beneficiaries from the selected sub-districts are brought under the fortified rice distribution campaign and the demand of fortified rice are determined.

As per the guideline, the DC-food under Ministry of Food supervises and manages the fortified rice distribution in the selected sub-districts. The beneficiary enlistment for the Government's VGD and FFP beneficiaries are prepared by the Union Parishad offices. The contracted rice millers supply the fortified rice to the upazila LSDs, from where the Union Parishad representatives supply to the beneficiary households.

The number of beneficiaries and budget of three social safety net programs are as follows:

Program	Beneficiaries (in million)	Budget (in million BDT)
VGD	14.25	16,989.10
FFP	0.05	26,240.00
OMS	8.94	9,495.20
Total	**23.24**	**52,724.3**

Source: http://socialprotection.gov.bd/data/

Table 5: The number of beneficiaries and budget of three social safety net programs

Bangladesh has a total of 652 food go-down situated at the upazila-level with a storage capacity of 2.1 million MT[4]. The opening public stock of food grain (rice and wheat) in July, 2020 was 1.12 million MT and the average closing stock of food grain was 1.56 million MT[5]. During FY 2019-2020, the food grain procurement under Public Food Distribution System (PFDS) stood at 1.80 million MT of rice[6].

Rice Fortification: Laws, Policies and Strategies

The Government of Bangladesh has several laws, policies and strategies for ensuring food fortification in the country. The laws, policies and strategies are presented below:

Food fortification laws in Bangladesh: The Iodine Deficiency Prevention Act, 1989 is the first food fortification law in Bangladesh. Under sections 4 and 6 of the act, manufacturing and sale of edible salt without iodization was made a punishable offense. Section 9 of the act provides that violation of the law can lead to a fine up to BDT 5,000 and imprisonment of up to three years.[7]

Another law on food fortification in Bangladesh is 'Fortification of Edible Oil with Vitamin A, 2013'. Some main features[8] of the law are as follows:

- The oil extracted from soybean, palm and palmoline or any vegetable oil such as rice bran oil is considered edible oil. In contrast, mustard oil, coconut oil, olive oil etc. are not included in this list.
- The fortification with vitamin A of the edible oil is mandatory in case of production, preservation and marketing.

[4] http://socialprotection.gov.bd/wp-content/uploads/2018/11/MoFood-Final-PPT.pdf
[5] http://fpmu.gov.bd/agridrupal/sites/default/files/FSR_123.pdf
[6] http://fpmu.gov.bd/agridrupal/sites/default/files/FSR_123.pdf
[7] Scaling-Up Rice Fortification In Bangladesh (WFP, GAIN, 2018)
[8] Scaling-Up Rice Fortification In Bangladesh (WFP, GAIN, 2018)

- The law imposes the restriction on import and export of “edible oil” that is not fortified.
- Tagging on the container is a must.
- The law empowers BSTI for regulatory enforcement and monitoring quality of fortified edible oil.
- The law specifies duties and responsibilities for producers, whole sellers, retailers, hotels, restaurants, the law enforcement agencies, Consumers Right Protection Department, and the Local Government Authorities.

Policy/Strategy/Plan	Provisions
The Constitution	**Article 15(a)** recognizes the fundamental responsibility of the state to secure its citizens the provision of the basic necessities of life including food. **Article 18** states that ‘the State shall raise the level of nutrition and improve public health as its primary duties’.
National Food Policy 2006	**Strategy 2.** Supply of sufficient nutritious food for vulnerable groups 28 To promote adequate intake of macronutrients, the policy of the Government is to work with NGOs and development partners to: a) identify vulnerable groups and individuals, implement nutrition programmes for improved food security and design appropriate strategies at the community level **Strategy 3**. Balanced diet containing adequate MN For better health, it is essential to ensure consumption of diets rich in iron, vitamin A and other MN in addition to the consumption of carbohydrates, proteins, fats and oils. To achieve this, cost effective public health interventions and nutrition education programmes need to be undertaken. Other long-term strategies include bio-fortification, i.e., the development of rice varieties which has higher levels of zinc and iron through conventional plant breeding. Meanwhile, effective programs for micronutrient supplementation and food fortification (with established standards and regulatory mechanisms) need to be explored to determine their efficacy and viability.
Policy/Strategy/Plan	**Provisions**
	Considering the negative effects of MN deficiency, the Government has decided to undertake the following steps: i. Nutrition education programmes a) Strengthening formal and non-formal education programmes to popularise the idea of balanced food and take steps for communication of dietary guidelines on balanced food in the mass media, b) intensify communication programmes on modification of dietary habits at the community level, especially in rural areas, and

	ii. Dietary diversification a) Undertake and provide extension services to home gardening and backyard poultry projects and programmes to encourage diversified food intake, in the backdrop of increased availability at the production and marketing levels. iii. Effective food supplementation and fortification a) Fortification of Atta and other processed food products; b) Compulsory iodization of salt for human and animal consumption; c) Supplementary feeding through nutrition and food intervention programmes.
National Nutrition Policy 2015	**Sub-strategy 6.2.8** Initiate a food fortification program and expand its use and perimeter (including, e.g., iodine in edible salt, Vitamin A in edible oil, and enriched main food for children, cooked at home with mixed micronutrients)
National Strategy on Prevention and Control of Micronutrient Deficiencies, Bangladesh 2015-2024	**Recommended Fortification Programs/Strategies** (p.49) a) Mainstreaming fortified rice through GoB safety net program and other mechanisms (open market sale, rationing, etc.), in addition to the diversification of food basket 29 b) Scaling-up fortified rice through the Public Food Distribution System c) Exploring scale-up of bio-fortification of rice with zinc d) Developing and endorsing standards and guidelines **Plan of Action** (p.62) a) Mainstreaming fortified rice through GoB safety net program and others (open market sale, rationing, etc.) in addition to the diversification of food basket b) Scaling-up fortified rice through the Public Food Distribution System c) Exploring scale up of bio-fortification of rice with zinc **d)** Developing and endorsing standards and guidelines
National Plan of Action on Nutrition 2016-2025 (NPAN2)	**6.2.8 Key Action Area**: Promoting food fortification and enrichment (followed by national guideline with priority given to food-based approaches) with micronutrients for the targeted people. (p.33) Major activity 2. Introduce fortified foods into food basket of safety net programs and bring to scale (p.33) Taka 5,953,216,000 for Rice Fortification has been estimated in NPAN2 (public cost only) p.86
8th Five Year Plan (July 2020 – June 2025)	**14.3.2 Objectives and Strategies for Food Security:** The section explicitly mentions the importance of fortified food grain and Pusti Chal and engagement of private sector in promoting it (p.734)

Table 6: ***Rice fortification in policies and strategies of the GoB*9*:***

[9] Scaling-Up Rice Fortification In Bangladesh (WFP, GAIN, 2018)

CHAPTER 03
SUPPLY-SIDE ACTORS

For the purpose of the backward chain assessment, in-depth interviews were conducted with the *paikers* / traders from whom the companies have been sourcing their inputs. As fortified rice is, at present, being primarily distributed through the Government's social safety net programmes in Bangladesh, the input supply (rice and FRKs) chain of these programmes was assessed.

Key-informant interviews and in-depth interviews with key stakeholders and value chain actors was conducted in order to understand the current functioning of fortified rice production and distribution in Bangladesh. A thorough investigation was conducted with the FRK producers and fortified rice blending millers to understand their production capacity, opportunities and key challenges. The investigations helped the study to understand the current fortified rice chain activities and the opportunities and constraints of the chain actors with regards to commercializing fortified rice in the national market.

For the purpose of the forward market chain assessment, interviews with distribution and retail outlets were conducted. This includes supermarkets and other groceries in Dhaka and the groceries and retailers in Sirajganj.

Since the knowledge on fortified rice is not widespread, the assessment on the market constraints was not particularly focused on fortified rice. Rather, an overall assessment was conducted in order to find out the market opportunities of fortified rice in Bangladesh. In addition, the super stores and retail shops that have experience in commercial selling of the fortified rice were interviewed in order to understand their experience and their perspective on possible interventions that are to be undertaken for successful commercialization of fortified rice.

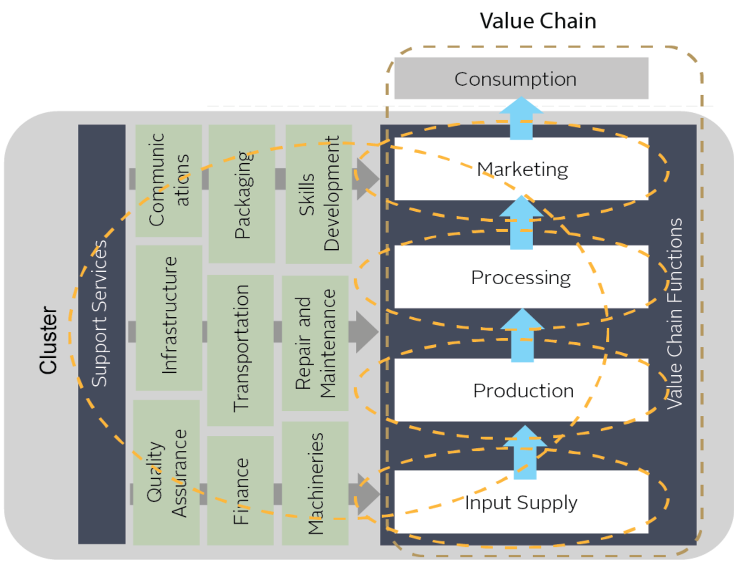


Figure 2: Interface between value chains, clusters and support services for value chain governance

The assessment also aims to understand how the *paikers* and retailers interact with their own suppliers and clients and how do they establish the value of the product in the market. The samples represented those who are not part of the current rice fortification value chain but can become part of it in the future. The samples were purposively drawn as a formative research approach was applied which is more suited for the in-depth assessment required to gather the findings as per the objectives of the study.

A critical part of any value chain analysis is the assessment of the value chain governance system. The governance systems involve provision of support system and enabling environment within a cluster that can support or enable the core value chain functions to perform in support of the market (refer to figure 1).

It was hence an important aspect of the study to assess the different support services that are essential for the millers, the *paikers* and the distributors to support the market for the fortified rice. The need for the different types of services and policies was discussed during the interviews with the millers and the forward and backward chain actors. Depending on the findings, an assessment was conducted with service providers, which includes respondents from the Government institutions, international development partners, Local Government authorities, etc.

3.1 Chain Actors and Functions

3.1.1 Key Chain Actors

There are six (06) major functions in the rice value chain before the product reaches the end market. These are:

1) Input supply
2) Production
3) Collection and trading
4) Processing (milling)
5) Wholesale
6) Retail

Paddy suppliers: There are several thousand paddy suppliers operating all across Bangladesh. These paddy suppliers usually collect paddy from the farmers and sell to the rice mills. As rice mills require a large amount of paddy for processing (40-100 MT/month), it is convenient for them to collect paddy from the suppliers rather than from the farmers.

Paddy suppliers often supply paddy to the millers and charge commissions. The commission is around BDT 30-35/40 KGs of paddy. In addition to the commission charge, the millers also have to pay tax of BDT 7/40 KG. Furthermore, the millers also have to bear the cost of transportation of paddy to the mill and the loading/unloading cost. In total, these additional cost sums up to BDT 50-60/40 KGs of paddy (including the commission charge).

FRK producers: At present, there are 7 manufacturing companies and rice millers producing FRK (Fortified Rice Kernel) in Bangladesh. Igloo, Bangladesh (concern of AML) and Masafi Agro Food Industries Limited are the two pioneering companies who started manufacturing FRK in 2014 and 2015 respectively. Inclusion of fortified rice in social safety net programs (VGD) was the primary motivating factor for the companies to start FRK production. At present, FRK, that are required for the distribution of fortified rice in social safety net programs are being procured from these 7 manufacturers by the GoB.

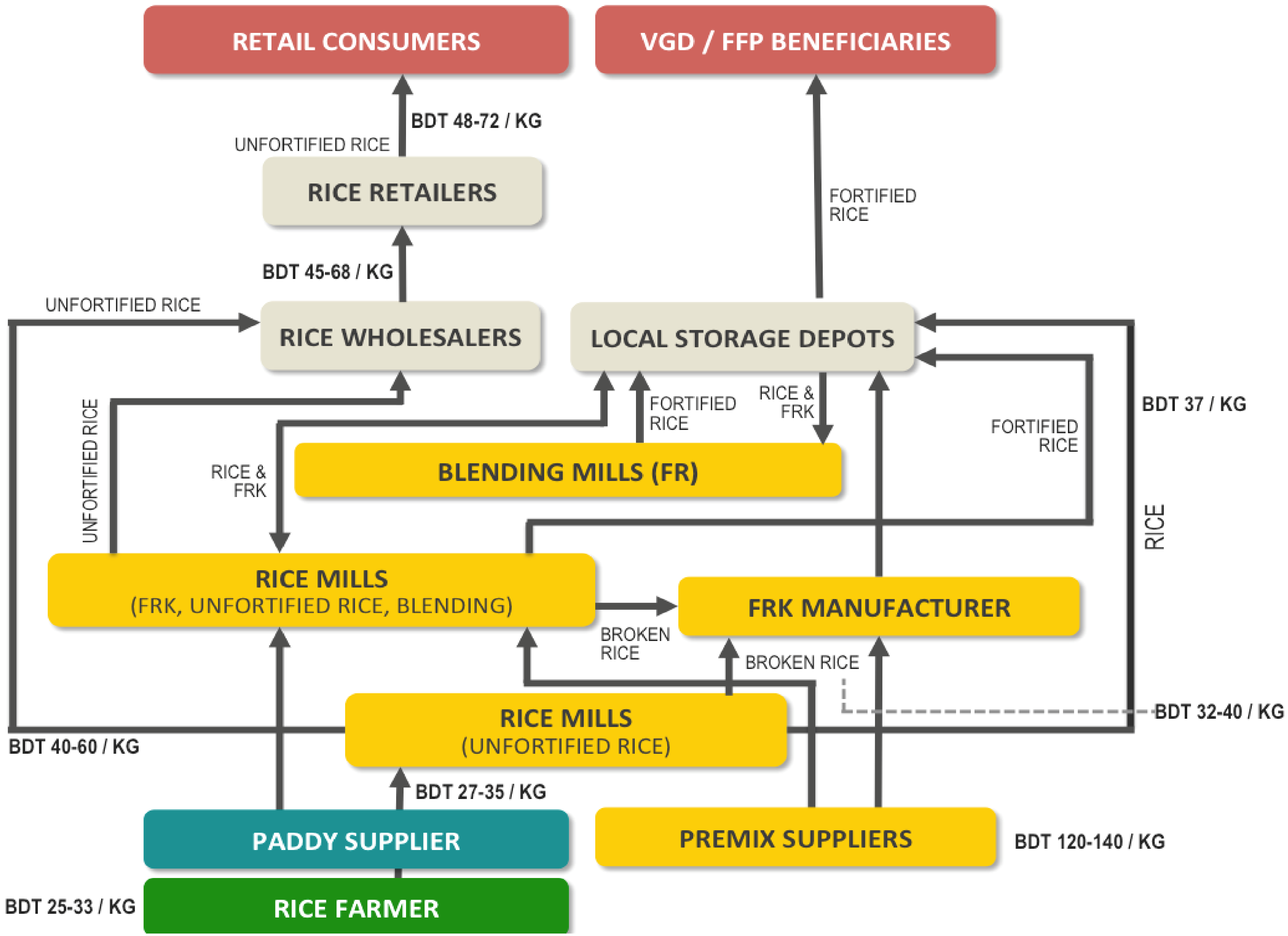
The machineries that are required for FRK production was imported, mostly from China, by the manufacturing companies. The companies use the hot extrusion machine for production of FRK. The machines have the production capacity of 400-500 KGs of FRK/hour. The machine costs around BDT 10 to 20 million. According to the KIIs conducted, it requires around BDT 30-40 million for setting-up the entire FRK production unit (excluding the land purchase cost). The current manufacturing companies used their owned lands for the set-up.

There are no local premix suppliers in Bangladesh. FRK producers import premix mostly from DSM nutritional products AG, India and AQC Chem Lab Private Limited, India. There are premix supplier companies in China, Germany, and Singapore etc. However, due to a lower purchase cost, the FRK producers procure premix from India. The premix costs around BDT 120-140/KG.

In addition to the premix, the factories procure broken rice for producing FRKs. The broken rice is being procured from the rice mills. The price of broken rice is around BDT 35-40/KG. The broken rice is crushed and grinded to make rice powders and then the premix is being mixed to the broken rice before it is boiled with hot water and condensed to make kernel rice. The broken rice and premix is mixed with a ratio of 95.5:4.5. 95.5 KGs of broken rice is mixed with 4.5 KGs of premix to produce 100 KGs of kernels. Kernels are sold at BDT 150-185/KG.

The 3-ply 25-KG bags are used to packet fortified rice. The bags are being procured from kernel bag manufacturing companies. There are multiple kernel bag manufacturers in the country. The current FRK producers procure bags from Dhaka and Khulna districts. Each bag costs around BDT 70-90.

FORTIFIED RICE
VALUE-CHAIN
MAP



Rice millers producing fortified rice: According to 'Bangladesh fortified rice millers association' (established in 2017), there are 95 enlisted rice millers producing fortified rice. Among them, 82 millers are members of the association. There are fortified-rice blending mills in all 64 districts of Bangladesh.

At present, fortified rice millers supply fortified rice only to the Government for the social safety net programs. The millers submit tenders against the public procurement notice published by the Government. The tender advertisement is published, usually, two times a year. After winning the tender, the millers procure rice and kernels from the Upazila-level LSD (Local Storage Depot) and blend them in their factories.

After the blending, the millers distribute the fortified rice in the LSDs.

The blending unit machineries are locally available in Bangladesh. However, some millers imported the blending machineries from abroad (mostly from China). The blending machines have capacity of 4-6 MT/hour. The machines cost around BDT 500,000- 700,000 depending on the capacity of the machine.

Each of the blending millers supply around 2,000-4,000 MTs of fortified rice to the Government annually.

The mills employ 5-10 permanent employees for operating the blending units. The employees' monthly salary is around BDT 10,000-20,000. In addition to the permanent employees there are contractual labors who works to carry paddy to the mills and carry and package produced rice. These laborers are paid by the volume of paddy/rice they transfer. Usually they are paid BDT 25-30/40 KGs of paddy/rice.

These labors are not permanent, however, there are employees/labors who work in a single factory for a long period of time. The hiring of labors widely varies depending on the production volume of the mills and on the seasons. During the harvesting season, the mills produce large volume of rice and hence, require more labors. A semi-auto rice mill, supplying around 25-30 MTs of rice/month requires 25-30 such labors. In addition, the mills require labors for loading and unloading of paddy/rice.

Rice millers producing unfortified rice: According to the 'Food planning and Monitoring Unit (FPMU)' of Ministry of Food of the Government of Bangladesh, there are 17,541 husking mills (without rubber shelar and polisher), 2,238 husking mills (with rubber shelar and polisher) and 838 automatic Government enlisted rice mills in Bangladesh[10].

The rice mills procure paddy from the paddy wholesalers. According to the KIIs, paddy is mainly sourced from the northern part of the country, e.g. Bogura, Naogaon, Natore, Dinajpur districts. Paddy is procured all year round, depending on the demand from the GoB and the wholesalers, to whom the mills supply rice.

The rice mills submit tender against the public procurement notice of the Government, usually two times a year, to supply rice to the Government. Each tender comprises of orders of rice for 6 months. As such, as per the Government order, the rice mills provide rice to the Government in every month.

The Government of Bangladesh procures rice from the mills for distributing in different social safety net programs. According to the KIIs with the rice mills, the

[10] http://fpmu.gov.bd/fpmu-database/0605-b.htm

semi-auto rice mills supply 50-90 MTs of rice to the Government in six months, whereby the auto rice mills supply 150-300 MTs. The Government procured rice at a price of BDT 36/KG in 2020 and in 2021, the price increased to BDT 37/KG. The rice mills procure paddy on their own and supply the rice to the LSDs. DC-Food is the regulatory authority of the process.

The semi-auto rice mills dry the paddy manually after it is steamed. It takes 3-4 days, depending on the weather, to dry up the paddy. The mills can process 20,000-40,000 KGs of paddy in a week. In case of the auto-rice mills, the whole process is conducted automatically in the machine. The machine has the capacity of processing 450-650 MTs of rice/36 hours. The conversion rate is 1.5-1.6:1. 1 KG of rice can be processed from 1.5-1.6 KGs of paddy. Depending on the variety, paddy costs around BDT 1,200-1,300/40 KGs (coarse variety) and BDT 1,400-1,500/40 KGs (fine variety).

According to the KIIs, the rice varieties usually processed by the millers are: *Hira, Swarna-5, Mamun, Guti Swarna, 28, 29, Katari* etc. The coarse rice is sold at a rate of BDT 2,100-2,200/40 KGs and the fine variety is sold at BDT 2,200-2,500/40 KGs.

The millers supply around 20-40 MTs of rice to wholesale markets. The semi-auto rice mills that were interviewed from Sirajganj district expressed that they only sell to the wholesale markets of Sirajganj due to risks involved in transportation to other districts. The sacks that are used to packet rice are procured from local manufacturers. The 40-KG bag costs around BDT 35-45.

3.2 Rice Sellers

Wholesalers: There are several thousand rice wholesalers all across Bangladesh. These wholesalers usually procures rice from the millers and sell to the market retailers. Rice wholesalers trade around 100-1,000 MTs of rice/month.

PHOTO: A rice retailer in a Sirajganj bazar

There are local wholesalers who procure and sell rice within one district and there are regional wholesaler who collect rice from and sell to several districts of Bangladesh. The large wholesale rice markets are in Dhaka, Chattogram, Sylhet and other divisional cities of Bangladesh. The wholesaler procures rice from the millers at a price of 40,000-60,000/MT and sells to the rice retailers at a price of BDT 45,000-68,000/MT.

Retailers: There are millions of rice retail shops all across Bangladesh. There are shops in the marketplaces where only rice is sold and there are departmental stores, where rice is sold along with other daily commodities. As the staple food, rice is sold in majority of the retail shops of the country.

Depending on the volume of business retailers sell 0.2-50 MTs of rice per month. Retailers usually source rice from rice wholesalers. However, there are some large retail shops that source rice directly from the rice mills. Although, the number of such retail shops is very low. Depending on the variety, retail price of rice is around BDT 48-72 per KG.

Hussain and Leishman (2013) identified several categories of retail food shops in Bangladesh.[11] These are:

1) Temporary open-air stalls
2) Roadside stalls
3) Municipal markets
4) Convenience stores
5) Supermarkets

Superstores and online markets: According to 'Bangladesh Super Market Owners' Association', there are around 250 outlets of super markets spread across the country. Compared to the general retail shops, the super shops offer a wide variety of products. In addition, there are many online purchasing platforms in Bangladesh offering daily commodities.

In total there are an estimated 15-20 lakhs online shops in Bangladesh. However, the platform selling a wide variety of commodities is much lower. Only 6 percent of the smartphone users in Bangladesh are regularly making purchase from online shops, and another 5 percent are making purchase less frequently according to a study of GSMA intelligence. The current market size of online market is about BDT 10 billion with a growth rate of 30-40 percent.[12]

The super shops sell rice of different varieties and of different packaging. The following table provides a comparative scenario of sales information from a particular super shop of Bangladesh:

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[11] Hussain, S. S., Leishman, D. (2013). The Food Retail Sector in Bangladesh. Global Agricultural Information Network, Delhi, India.

[12] https://www.thedailystar.net/business/news/smart-shopping-bangladesh-lowest-among-peers-1789333#:~:text=As%20many%20as%2015%20to,and%20Information%20Services%20(BASIS).

Rice variety	Open / Packaged	SKU	Procurement price BDT/KG	Selling price BDT/KG	Monthly sales volume (MT)
Miniket-regular	Open	-	49	56	150-200
Miniket premium	Open	-	58	63	300-350
Miniket	Packaged	5 KG	65	75	2-5
		10 KG			5-10
		25 KG			15-20
Nazirshail standard	Open	-	48	54	150-200
Nazirshail premium	Open	-	52-54	62	150-200
Nazirshail super premium	Open	-	64-66	70	5-8
Nazirshail	Packaged	5 KG	65-68	70-72	12-15
		10 KG			
		25 KG			5-10
ACI Nutrilife low GI rice	Packaged	1 KG	-	130	1-2

Table 7: comparative scenario of sales information

The following table illustrates the packaging units of the available rice brands in Bangladesh:

Brand	Available package size
ACI Pure	5 KG, 10 KG, 25 KG
PRAN	5 KG, 10 KG
Aarong	5 KG, 10 KG
Rupchanda	5 KG, 10 KG
Teer	5 KG, 10 KG, 25 KG

Table 8: the available rice brands

The open rice that is sold from the super markets are procured usually from mills. However, they procure rice from local wholesalers in case of additional requirement. The rice is being procured from Kushtia, Naogaon, Bogura, Mymensingh, Dinajpur etc. districts. The super shops usually keep store of rice required for weekly sales (around 500-1000 MTs).

As per the KIIs conducted with the super shops, it is more convenient for them to sell fortified rice if any existing rice selling companies sell under their own brand. Selling fortified rice with their current rice packages will require additional marketing and there will be more risk involved. The existing big companies, selling rice with other daily commodities will also have an additional benefit of displaying their products alongside their regular products that will attract the customers. The super stores will also offer advertisement and product display at a discounted price to the big companies, whose products are sold in large volumes.

The online sales platforms are selling rice through their own packaging and of the existing rice brands. They usually procure rice from the rice wholesalers as they can get credit facility from them. The average weekly sales of rice are around 35-50 MTs. The following table illustrates rice sales information of a particular online sales platform of the country:

Rice variety	SKU	Selling price (BDT)	Monthly sales volume (MT)
Nazirshail standard	5 KG	340	12-15
Nazirshail premium	5 KG	350	
Miniket standard	5 KG	325	10-15
Miniket premium	5 KG	350	
Rice of different brands	1 KG, 2 KG, 5 KG	-	1-2

Table 9: online rice sales

3.3 Support Services

Government of Bangladesh: Ministry of Women and Children's Affairs (MoWCA) in collaboration with Ministry of Food and the World Food Programme (WFP) has been implementing the social safety net programs in Bangladesh. VGD, FFP and OMS are three major components of the GoB's social safety net programmes, through which fortified rice is being distributed to the vulnerable population.

There are two different forms of VGD: Income Generating Vulnerable Group Development (IGVGD) and Food Security Vulnerable Group Development (FSVGD). IGVGD participants are provided with a monthly food ration of 30 kilograms of wheat/rice or 25 kilograms of fortified flour (atta) while FSVGD participants are provided with a cash support of Taka 100 along with 15 kilograms flour. VGD activities are run on a two- year cycle, and participants can only participate for one cycle (FPMU, 2007). Under the Food Friendly Programme, each beneficiary can purchase rice at a subsidized price of BDT 10/KG. Under open market (theindependentbd, 2018). 'Open Market Sales (OMS)' is a public food distribution programme, where rice is sold at a subsidized rate of BDT 15/KG (FAO, 2017).

Development organizations: The World Food Programme (WFP), Global Alliance for Improved Nutrition (GAIN) and Nutrition International (NI) are the three organizations that are supporting the Government of Bangladesh and providing necessary technical assistance for the rice fortification implementation in Bangladesh. In addition, the organizations have several other projects and initiatives for reducing malnutrition through fortification of food products. A recent paper titled 'COVID 19 is making it harder for vulnerable people to access healthy food, strengthening large scale food fortification should be part of the response' stresses that importance of fortification of food products is necessary than ever during the COVID crisis. Nutrition International in collaboration with Harvest Plus is implementing production and marketing of 'bio fortified Zinc rice' with two rice varieties, BRI-74 and BRI-84. The rice variety will be promoted in the Government social safety net programs and to the retail markets. According to the KIIs, it was expressed that consumer psychological analysis is important for marketing of the fortified rice varieties in the national market.

Transportation service providers: Millers, rice wholesalers and rice retailers require transportation service for transportation of rice from the mill through the wholesale shops to the retail shops. There are several transportation service providers existent in the country. In most cases, the chain actors hire transportation service from the transportation service association present in all 64 districts in Bangladesh. Transportation cost highly varies with the distance of transporting goods. Usually, trucks that can carry 5 to 8 MTs of goods are used to transport paddy and rice.

Machinery suppliers: There are several machinery suppliers in Bangladesh setting-up rice mills and blending units. The machinery suppliers are present in almost all the regions of the country. The machinery suppliers are setting-up blending units for mixing FRK with the rice to produce fortified rice since last 3-4 years. At the initial stage, these suppliers received technical support from WFP. At present, stainless steel is being used for the blending unit set-up. The machineries for the blending unit are procured from national markets (mostly from Dhaka). However, the local machine part suppliers sometimes import machineries from abroad (mostly from China). The machinery suppliers delivers the machines in the rice mills on their own. It takes 10-30 days for completing a milling or a blending machines.

At present, the blending units costs around BDT 500,000-600,000, according to the KIIs with the machinery suppliers. The suppliers transport the machines and the machineries to all the districts of the country. The machinery suppliers have around 20-30 permanent employees working in their workshops. The suppliers also provide support in case any malfunction of the machines.

FRK testing facilities: At present, the ‘National Food Safety Laboratory (NFSL)’ is the only FRK testing facility in the country. The NFSL has been able to test all the six micronutrients (Vitamin A, Vitamin B1 and B12, Iron, Folic Acid and Zinc) of the FRK. It requires 10 working days to complete the testing and prepare report. Each test requires BDT 33,000 to 34,000. However, the capacity of the NFSL with regards to testing of the FRK needs to be increased. The laboratory, at present, does not have adequate reagents to test the FRKs if the testing demand increased even a little compared to the demand it has currently.

CHAPTER 04
DEMAND-SIDE ACTORS

This chapter covers salient findings from the quantitative consumer survey and qualitative interviews conducted in Dhaka and Sirajganj.

4.1 Respondent Profile

Just over 640 respondents were sampled, mainly from urban metropolitan and central semi-urban localities. In the surveyed sample, 65% of respondents live in rented homes.

RESPONDENT PROFILE

Gender: female
Age: 33 years
Education: HSC←→Grad
Monthly Income: BDT 48,000
Residence: urban, rental
Rice type: milled & polished
Outlet type: open market, Grocery store

About 65% of respondents were females, and the remainder, males. Average age of respondents was 33 years. Around 85% of all respondents were married.

Over 70% of respondents had between first grade to higher secondary certificate (HSC) level education, while about 10% had no formal education. Their children typically attend school, the future of their education secured through sufficient household incomes.

Taking BDT 100,000 as the upper limit, average monthly household income was BDT 43,000. Using BDT 120,000 as the upper limit, average monthly household income was calculated as BDT 48,000 only.

Using the Socioeconomic Classification (SEC) grid from 2010, these figures return SECs of A+, A, B+ and B. overall, these SECs signify relatively high-income, middle to upper class segments.

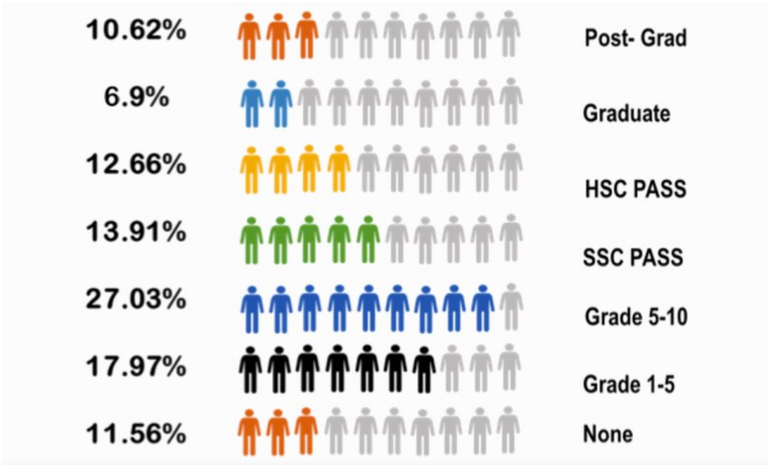

FIGURE 4: Educational status of survey respondents

According to the Household Income and Expenditure Survey (HIES) 2016, it may be attested that the households use up about 47% of their monthly income in food expenses. On average that comes to approximately BDT 20,000 to BDT 23,000 in monthly food expenditure.

4.2 Rice Purchase & Consumption

4.2.1 Rice Breeds

Frequency of different rice breeds mentioned by participants show over half (55%) of all households regularly purchasing *polao* rice. However, what the graphic does not reveal is that purchase volume of *polao* rice is very low, often around 5% of total rice purchases. This is because *polao* rice (usually Kalijira or Chinigura) is used to prepare *polao*, fried rice, and other specialty items for festivals, celebrations etc.

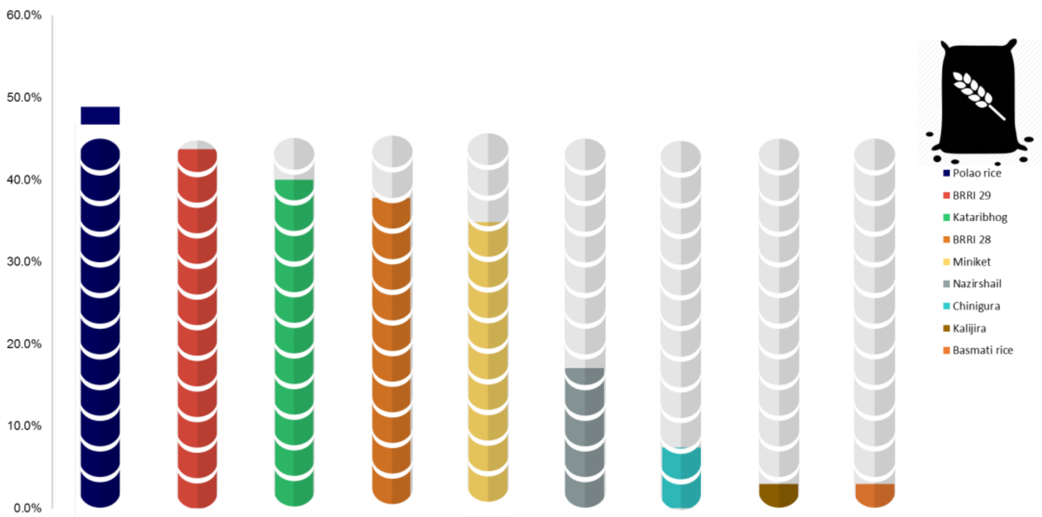

FIGURE 5: Consumption frequency of different breeds (varieties) of rice

To better contextualize the purchases, approximate market prices for the different varieties are given below.

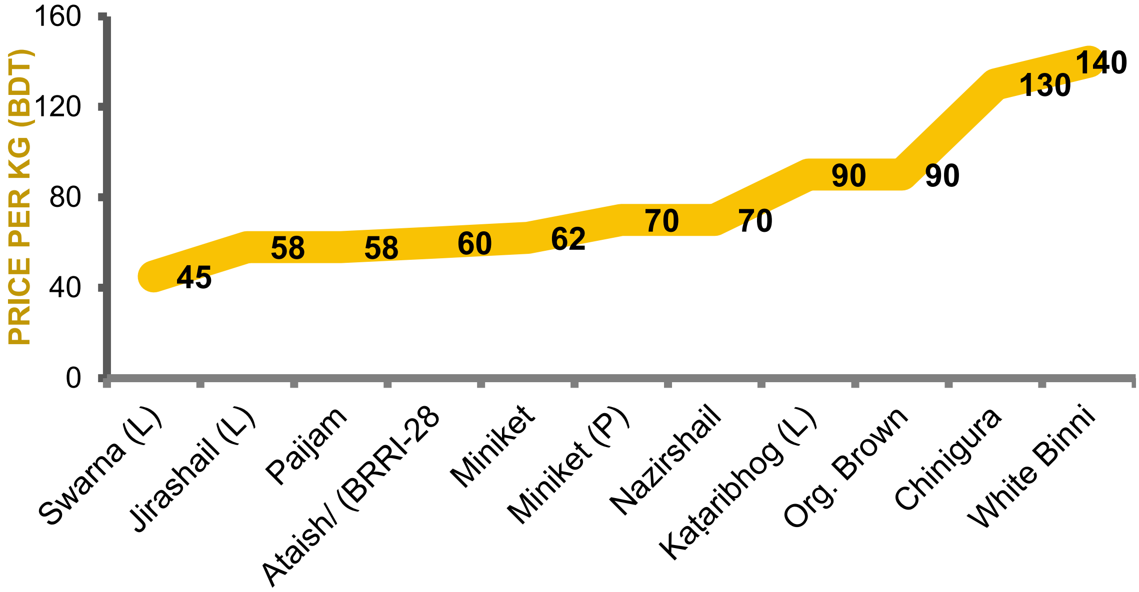

FIGURE 6: Comparative prices of various rice breeds (circa December 2020)

4.2.3 Purchase Volume & Frequency

Over 70% of households buy between 25 KG and 50 KG of rice per month. The monthly consumption data clusters especially around the 40 KG mark.

About half of surveyed households buys Miniket variety rice, accompanied by supplemental purchases of fine-grained and aromatic *polao* rice. BRRI Dhan27 and BRRI Dhan28 are each consumed in a quarter of the sample.

The number one Bangladeshi staple is purchased after intervals of at least thirty days. The second most common interval is two-months, or sixty days. Weekly purchases are done on an ad hoc basis.

The most common motivation derives from the high-volume, which can get quite heavy for one person to carry. Therefore, consumers prefer to limit the number of trips they must make to the store. Food items commonly bundled with rice includes, pulses (*daal*), edible oil, sugar, salt, and spices.

Perception of Rice / Grain Quality
Some respondents voiced concerns about the current quality of rice / grains. In their account, rice quality has gone down due to use of chemical fertilizer and other unhealthy cultivation practices. Interestingly, consumers do not perceive milling as a source of loss of nutritional value.

This Nazirshail and that Nazirshail [consumed by my father] are not the same. So what if the name is the same?

[Adult male, Sirajganj]

4.2.4 Average Rice Inventory

The typical consumer keeps her rice in a tin container or a plastic jar. The household staple, and coarse grain for domestic helpers are usually poured out from packs and stored thus.

Very broadly speaking, the average household store contains 20 KG of each variety at the beginning of the month, following the monthly replenishment of domestic inventories. The timing is usually dictated by the timing of salaries and wages, which may be anticipated by the first week of the month.

Slender grain *polao* rice is bought in 1 KG packs, and stored intact and usually exhausted over one or two occasions.

Just like commercial actors operate multiple pipelines of value acquisition and distribution, the consumer household also operates multiple lines of acquiring value-added products. This may be called the 'value-acquisition chain'. It may be convenient to think of this as sets of physical inventory, tracking mechanisms, budget allocation, retail source, means of acquisition, and unique usage intention associated with specific products.

POINTS TO PONDER

If a consumer adds fortified rice to her store, then will her household end up carrying four streams of rice? Or will fortified rice cannibalize or replace one of the three streams?

Clearly, buying fortified rice is not as simple as fetching a pack from the corner store. There are years upon years of tradition and habit intimately intertwined with the present state of affairs.

If FR is to penetrate Bangladeshi households, it will need strong rationale, single-minded focus, and high credibility will be needed for a household to accommodate a new stream of food commodity.

4.2.5 Different Streams of Rice

Almost all surveyed households buy three types of rice. These are:

	STREAM	RICE GRAIN TYPE	PACK	OUTLET
a)	Family staple	Usually highly-milled, white rice	Loose	Bazar
b)	Helper' feed	Usually coarse or medium grade rice	Loose	Bazar
c)	Specialty grain	Fine-grain, slender rice for polao etc.	Packaged	Store

Table 10: Different Streams of Rice

It is vital for future MFR marketers to understand the motivations and dynamics that characterize these different streams.

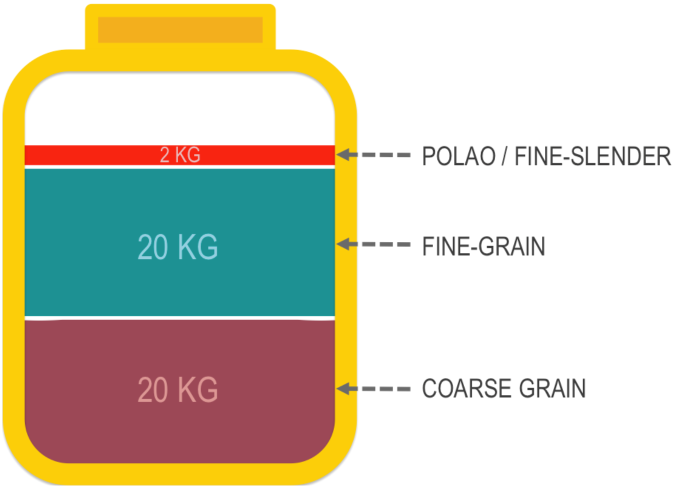

FIGURE 7: Illustrative mix of rice varieties in the average household surveyed

For example, many urban households increasingly prefer to purchase the same variety of rice for family and domestic helper consumption. This may be due to the narrowing gap between milled, white rice and coarse rice.

For example, the Miniket variety of the fine-grain rice is priced around BDT 5 to BDT 10 more than coarse rice like Swarna-5 per KG. This implies a monthly, additional cost of BDT 100 - 200 only when a household opts to provide fine-grain rice to domestic helpers.

Domestic helpers eat IRRI-28 rice. Other varieties are not as filling for them. They have this rice in their own homes (too).

[Adult male, Dhaka Metro]

A few respondents who still purchase coarse rice for domestic helpers said that the latter actually prefer the variety because, a) coarse rice is more filling, and b) coarse rice tastes better.

Estimating Rice-Related Expenditure

Using rounded figures, the total rice-related expenditure for a family of four (04) over a 30-day period can be calculated as follows:

EST. MONTHLY RICE-RELATED EXPENSES (BDT)			
ITEM (RICE)	**UNIT**	**COST/UNIT**	**COST**
Fine-grain rice (for family)	20	65	1300
Coarse-grain rice (for helpers)	20	50	1000
Polao rice (for special dishes)	2	130	260
Transport and incidentals	2	400	800
TOTAL			**3360**

Table 11: **Estimated monthly rice-related expense (BDT)**

This figure is later used to estimate the value of consumer segments.

4.2.6 Purchase Decisions & Influencers

In the majority of cases (80%), consumers said that the purchase decision is worded in generic terms, e.g. buy rice. About half of these respondents mentioned specifying rice breed / variety, and preferred point-of-purchase.

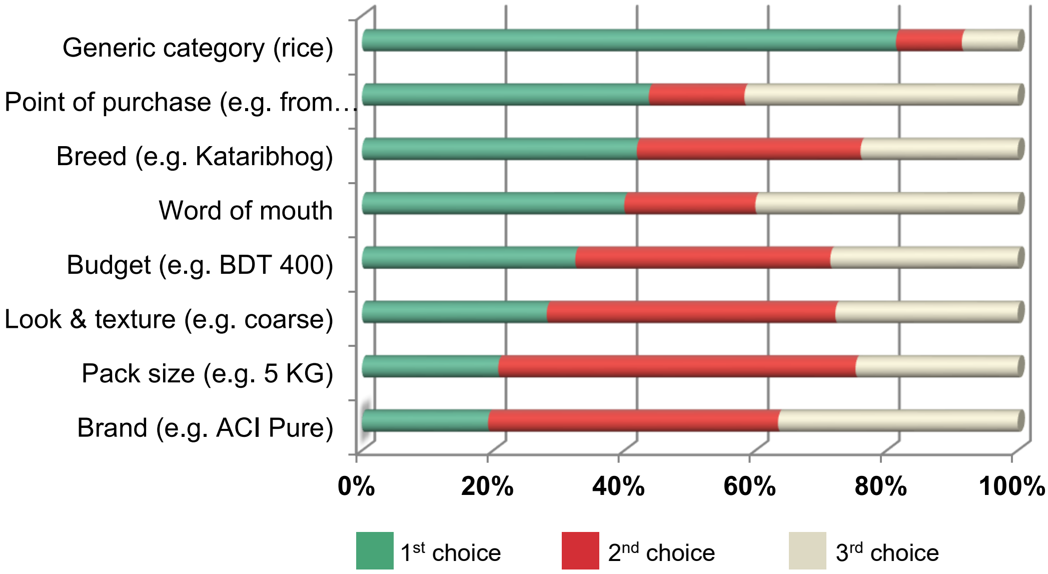

FIGURE 8: Consumer ranking of how purchase decisions are worded

However, the data above needs to be read in conjunction with the finding that households do not change their preferred breed in the short or even medium term, the conclusion is that these cases are characterized by predetermined choices. That is to say, when the average housewife asks her husband to "buy rice" – they are both aware of what variety of rice must be bought.

In this sense, the decision of rice breed is a long-term decision – and judging by qualitative responses, pre-decided as a matter of household tradition and even social status (see below).

In social and behavior change theory, long-term decisions are considered to be rooted deeper in cultures, and therefore much more difficult to change. This may allow analysts to draw the conclusion that consumers cannot be realistically expected to switch the breed of rice they consume at present.

Rice Breed as Status Signal
There appears to prevail a general, urban consensus that people from lower socioeconomic classes 'prefer coarse rice' because it is 'filling'.

> *Fine-grain rice has become affordable. Now even they [domestic helpers] can afford it in their houses.*
>
> [Female, Sirajganj]

Graduation to fine-grain rice is seen as an improvement not only in daily diets, but also in terms of standard of living.

4.2.7 Gender Roles & Purchase Influencers

Male and female heads of household were found equally likely to keep track of rice stock in the household.

Qualitative data suggests that the same is not true for other food items.

In general, the trend seems to suggest higher male-involvement in commodity type items (e.g. rice, lentils, pulses, edible oil etc.), and discernable female-involvement in purchase of more perishable items, e.g. meat, fish, vegetables, and fruits.

Around 65% of consumers said that they did not consult retailer when making breed or brand choices. Another 25% reported asking once in a while, usually when the retailer is very well known to them.

> *Consumers do not evaluate or compare rice varieties / brands at retail points. Virtually none (95%) considers advertising messages during purchase.*

The overall conclusion to be drawn from the above is that consumers do not rely on retailers for decision-making. Volume and brand decisions are likely formed at the household level.

At retail points, consumers are most likely to specify the breed and weight / SKU. Just a little over 5% of respondents mention brand names at the retail point. When choosing, ‘whiteness’ and ‘granularity’ (in Bangla: *jhorjhore*) are key considerations (65%), ahead of affordability (60%).

4.2.8 Preferred Outlet Types

Middle and upper class consumers still procure loose rice most frequently from the open market. Mentioned by 30% of respondents, consumers are almost equally likely to buy locally packaged, unbranded rice.

There is evidence that national brands and local brands are competing to gain foothold in major rice markets. New, attractive packaging developed by larger brands are also getting consumers interested.

If ‘local brands’ and ‘locally packaged brands’ categories from the consumer survey are combined, then their combined category gets mention from 45% of consumers as their preferred type of retail outlet for buying rice.

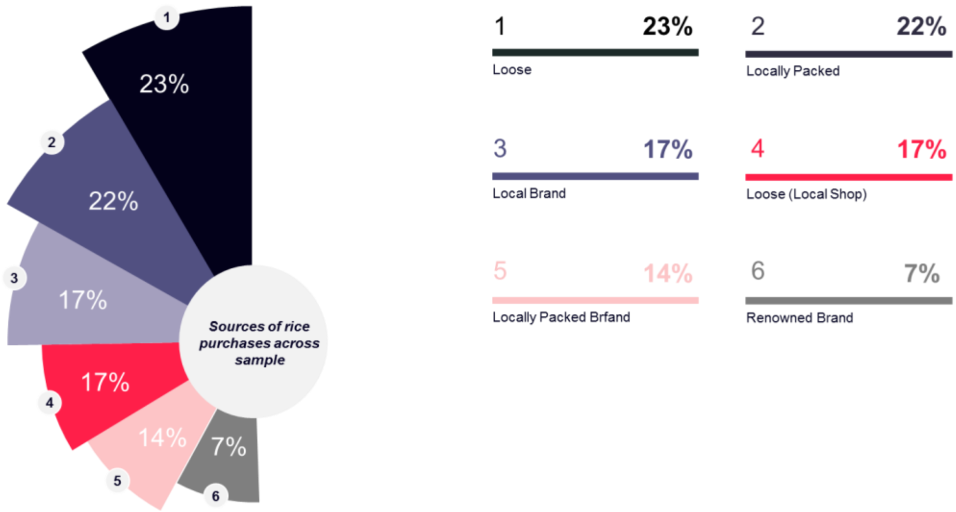

FIGURE 9: Sources of rice purchases across sample

Online and smartphone based shopping is at its infancy in the surveyed segments – perhaps owing to the lack of a younger demographic. Qualitative interviews however point towards a spike in online shopping and home delivery services in metro area.

4.2.9 Rice Eating Habits

All households have rice for lunch and dinner. Nearly half of all participants also mentioned having rice at breakfast, taking the daily tally to three rice meals.

To assess corresponding portion sizes, respondents were shown the graphics below with four plates with varying combinations and portions of rice and curries. They were asked to choose the one that most resembled their own plates – so as to establish how participants perceive the 'average meal'.

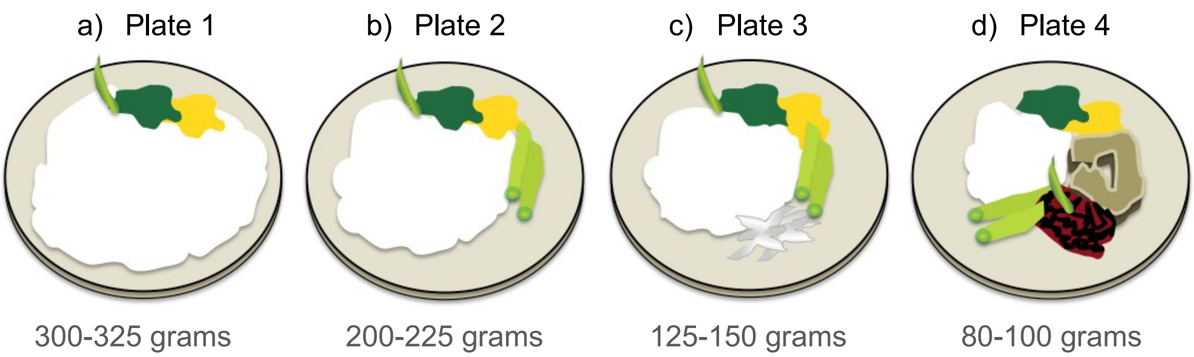

FIGURE 10: Rice Eating Habits

Just over 40% of respondents selected plate-3, and another 40% opted for plate-4. The remainder clustered around plate-2. Less than 3% thought plate-1 represented an average sized meal. To contextualize the finding above, it is useful to compare it with credible secondary data. Bangladesh (along with Myanmar) has the highest per capita rice consumption figure in the world.

Per capita rice consumption in Bangladesh is estimated at 181.3 KG per year, during 2020-21 period, according to 'The Food Outlook' report published by the Food and Agriculture Organization (FAO).[13]

This translates to approximately 497 grams, or half a kilogram, of rice consumed per day per person. Therefore, nearly 85% of answers cluster between (minimum) 160 grams and (maximum) 450 grams of daily rice consumption. Yet, the reality is that actual per capita daily rice consumption exceeds the highest estimate (assuming three full meals of rice per day).

In other words, 85% of respondents perceive ideal meal portions to be significantly smaller than the amount actually consumed by the average Bangladeshi. It may be added here that there is not a large difference between consumption levels in rural and urban areas. Global average rice consumption is about 30% of the Bangladeshi statistic. Of course this includes many countries where rice is not the main staple.

Most households (approximately 70%) cook rice twice every day. About two-thirds of rice cookers (usually female head of households) reported spending over two hours in the kitchen.

4.3 Purchase Preferences & Outlets

Breed Loyalty
Nearly 85% of households have continued with the same breed of rice over the past one-year. Out of them, 12% tried other options, but changed back to preferences.

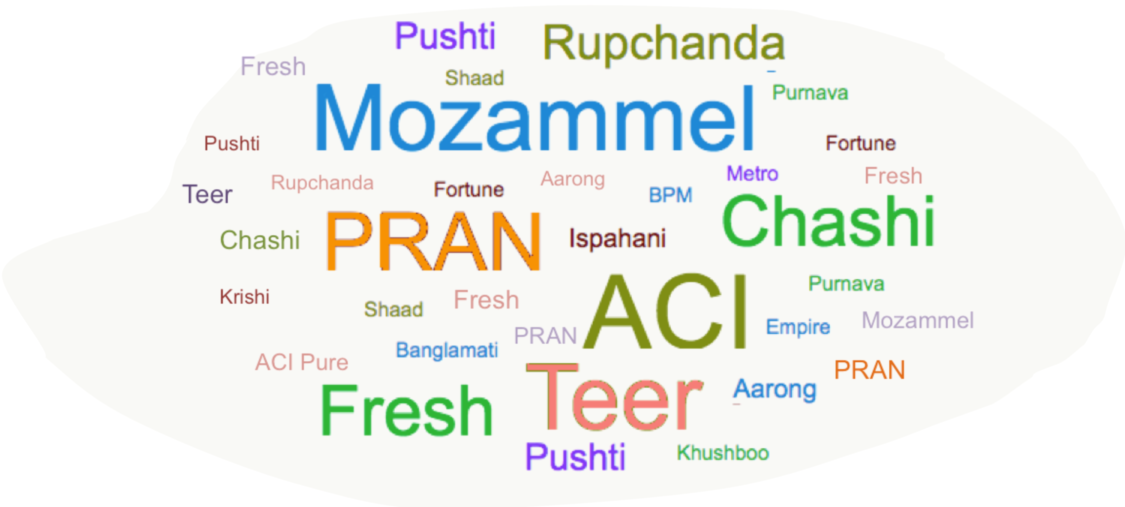

FIGURE 11: Word cloud based on rice brands mentioned by respondents

Brand Affinity
In general, brand affinity or loyalty is signified as low, as the category is driven by rice breed (variety), source, pricing, and volume. Just above 5% of consumers ask for rice by brand name, whereas over 40% reported specifying the breed. In qualitative interviews, a few participants mentioned 'Teer' as the standout, reliable brand.

[13] https://tbsnews.net/bangladesh/capita-rice-consumption-bangladesh-be-highest-asia-2021-fao-157333

4.4 Rice Fortification & Potential

Over 60% of consumers understand the basic concept of fortification, i.e. the concept of adding additional nutritious items to an existing food. Just above 25% said that they did not understand it.

4.4.1 Experience of Any Fortified Food

A little over 55% of consumers reported never having tried fortified food items. However, qualitative data suggests almost all households were consuming fortified salt. Perhaps, some consumers do not perceive Iodized salt as a fortified food item.

Of those who did try fortified rice, the majority (65%) received no information at the point of purchase. This is validated by the 'source of information' cited for fortified rice (see next section).

Interestingly, about 35% of consumers reported purchasing fortified oil, alongside a similar percentage that consumed fortified salt. This could signal a trend towards switching to fortified food commodities.

4.4.2 Awareness, Perception or Acceptance of FR

About 70% of consumers have not heard of 'Puṣṭi Chāl'. Small niches who have heard of it, mentioned 'promotional activities' or 'word-of-mouth' as their information sources. The question was asked in two stages during the interview to strengthen internal validity, and both occasions returned similar results.

Millers spoke about the 'dead grain' issue, where consumers mistake the fortified kernel for a withered grain.

This is a perfect example of a communication gap. For the practice of combing through dead grains, rocky granules, and other foreign elements is a cultural ritual in Bangladesh. Therefore, the discarding of kernels may be associated more with cultural knowledge ('alien grains must be picked out of rice') – than with a specific reaction to the presence of kernels.

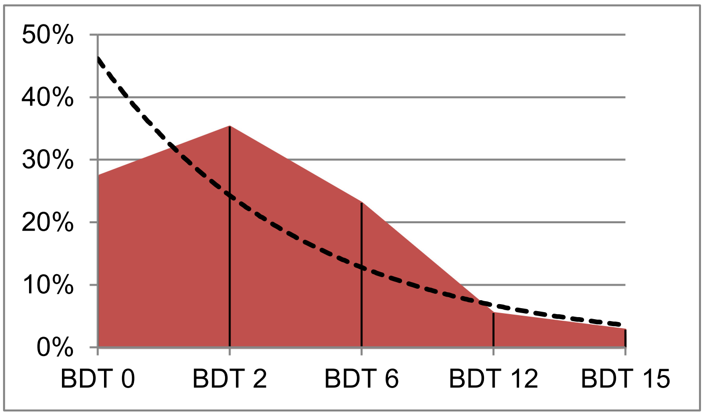

***FIGURE 12*: Willingness to buy at different levels of premium pricing (additional per KG)**

The challenge may be phrased as 'generating trial to penetrate into a consumer driven, highly competitive and closely-regulated food-commodity category, where consumption is characterized by adherence to family tradition, habitual decision-making, and trial inertia'.

Trial inertia means that target consumers are reluctant to try alternatives. It may be caused by satisfaction with current choice, unavailability / inaccessibility of alternatives, or reluctance to interfere with a working arrangement, etcetera. The breed of rice consumed in a particular household is fixed in the medium term, as if indicated by large portion of consumers who reported no change in the past years.

4.4.3 Food Purchase During COVID-19 Pandemic

It is highly interesting to note the peculiarities of the surveyed segments. Just over 75% of consumers reported increasing their rice purchase during the COVID-19 period (roughly March-December 2020).

This finding is corroborated by rice marketers like ACI, which markets the 'ACI Pure' brand of rice. The company reported experiencing higher-than-usual demand during the pandemic period, assigning into to 'hoarding tendency' among relatively wealthy households.

Another factor may that all family members were restricted to their houses during the period. This may have led to low or no dependence on store-bought meals, or food away from home (FAFH) – thus adding the load to household demand. Either way, the COVID-19 period may have artificially spiked consumption figures, which are likely to return to their usual levels once the situation returns to normalcy.

The other change reported during the pandemic is the practice of younger males making physical purchases, so as to minimize infection risk to the elderly.

4.4.4 Modes of Payment

Nearly 100% of consumers made cash payments, while 35% also availed of store credit. Some level of credit was also reported, especially when buying from local or neighborhood shops.

Digital Payments
Digital payments hovered around the 1% mark, despite the marked increase in online grocery shopping during mobility restrictions due to the pandemic. What this could mean is that while consumers are increasingly opting for online shopping, most are still paying for it using the Cash on Delivery (COD) method for actual payments.

4.4.5 General 'Healthy Diet' Behaviors

While the reported behaviors are not to be taken at face value, since most respondents are likely to associate these behaviors with social mobility.

Therefore, these behaviors are actually more indicative of dietary patterns associated with upward mobility and modernity.

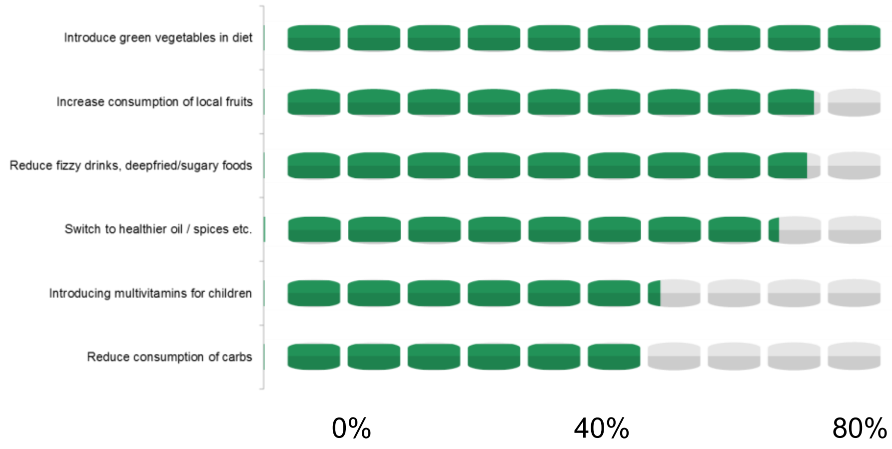

FIGURE 13: Healthy dietary practices tried / adopted by households

4.4.6 Micronutrient Awareness & Attitudes

Despite sampling from urban, literate segments – most respondents did not know that 'Micronutrients' are. Or they did not want to risk being wrong since 'micronutrient' (and more so its Bangla translation, *Aṇupuṣṭi*) seems to carry an academic / technical connotation.

Previous research has shown that general audiences do not differentiate between 'food' and 'nutrition'. When they do, they may take 'nutrition' imply consumption of animal proteins and exotic fruits, e.g. oranges, grapes etc. These are also what many Bangladeshi consumers perceive as 'good food'.

According to a wholesaler-retailer from Sirajganj, what respondents are very aware of are 'vitamins' – to which notion, they attach considerable importance. Therefore, marketers should consider promoting the vitamin contents of MFR alongside its zinc and iron contents.

Irrational Consumer Choices

Polished rice is low in fiber, oil, Vitamins B, thiamin anti-oxidant etc. After polishing about 80% Vitamin B1, 67% of B3 and 90% of B6 is lost. But literate, urban consumers still prefer it, presumably because the cooked rice is aesthetically pleasing.

Relatively older participants mentioned 'coarse, brown rice' grown during the month of Kartik (October-November). These are "hand-milled (*dheñki-chhata*) varieties, full of flavor and nutritional value."

Even the starch-rich water from cooking pots would be consumed to allay seasonal infections and fevers. But, respondents mentioned, currently rice-water is very diluted and usually poured out through the kitchen sink.

4.5 Market Segmentation

Given that over 98% of the population eats rice twice a day, the first premise is that the strategy would be dealing with large (not niche) segments. Five (05) types of data will be used to generate segmentation options or evaluate pre-generated segments (from expert inputs). These are:

INFO TYPE	SEGMENTATION IMPLICATION
Demographic Who is buying?	Consumers' geographic location, age, gender, education, income, expenditure, food expenditure
Behavioral How is she buying?	Consumers' decision process, preferred outlet, usual timing, purchase load, purchase frequency, payment method etc.
Transactional What is she buying?	Consumers' preferred product / variety, preferred SKU, preferred brand, insistence on specific variety / brand
Psychographic What is she like?	Consumers' personality, values, beliefs, attitudes, dreams, aspirations, ambitions, fears, opinions, interests, habits
Media Usage How to reach her?	Consumers' ownership of and access to media, time spent on different media, favorite content, favorite artist / content creator, celebrity role model

***Table 12:* Market Segmentation**

Above described data (secondary source, quantitative, qualitative, and observational) was used to compute the attractiveness of the different segments.

To identify the most potential segments, two key variables have been cross-matched against consumer data. These are:

a) Buyers of fortified rice
b) Buyers of fortified food product

Additionally, segments that reported attempts to improve daily diets and adopt healthier practices are included in segmentation criteria as well.

ALL (SAMPLED) CONSUMERS	FORTIFIED FOOD USER (SEGMENT-1)
Comparatively larger families, and higher volume of rice consumption in household	Smaller families, lower rice consumption in household
Prefers buying loose rice from open market	Opts for locally-packaged unbranded rice over loose rice
Rice purchased from local bazar, rice only shop and corner shop	Rice purchase from grocery stores and wholesalers
Values ease of cooking	Values faster cooking time and cost savings
Spends more than 20 minutes at retail	Spends 10 minutes or less at retail
More likely to buy Chashi and PRAN	More likely to buy Chashi or Teer
Willing to pay up to BDT 2 extra per KG of rice purchased	Willing to pay up to BDT 6 per KG of rice
More likely to be feature phone users	More likely to be Smartphone users

***Table 13:* Market Segmentation**

The Bangladesh Household Income and Expenditure Survey (HIES) 2016 shows average urban household income to be BDT 19,383, or BDT 20,000 approximately. If this is adjusted for time elapsed to BDT 28,000 – even then the surveyed segments with monthly household income of BDT 43,000 to BDT 48,000 comprise the high-income end of urban and semi-urban segments.

Household level food expenditure is shown to be 48% of household incomes (HIES 2016). Accounting for increases in consumption, this percentage may be rounded off as 50 per cent.

Survey data has been analyzed to pinpoint consumers most likely to purchase fortified rice. Naturally, the most promising group in this regard is comprised by those who have already bought the product. The second potential segment is made up of individuals / couples / households that purchase other fortified food commodities. A third, high-income segment is briefly explored due to their preference for premium, value-added (non-food) products and brands.

		CONVERSION POTENTIAL		
		LOW	MEDIUM	HIGH
ABILITY TO PAY	HIGH	Too High to Reach	Nurturing Nesters	
	MEDIUM			Informed Shapers
	LOW	Pushti Chal consumers		

TABLE 14: Evaluating consumer segments' market potential

Segment-1: Informed Shapers

Selection Criteria: bought fortified rice

The most promising consumer segment is represented by those who actually bought and tried fortified rice during the pilot. This segment is comprised of individuals and/or couples who are ready to try new products with premium pricing – provided they perceive that promised benefits are relevant and meaningful.

Segment-2: Nurturing Nesters

Selection Criteria: regularly buy (non-rice) fortified food commodities

The second potential segment consists of consumers who reported regularly purchasing fortified food commodities like fortified flour and fortified edible oil. Since these households have already made the critical decision of spending more to obtain fortified foods – it possibly signals understanding and appreciation of fortification. This, in turn, means that marketers will not need to start consumer education and persuasion from block one.

Segment-3: Too High to Reach

Selection Criteria buy (non-food) premium or value-added product

A small group of consumers defined by the high-income bracket of BDT 60,000 to BDT 120,000 were found willing to pay premium prices for products with additional benefits or special ingredients. Such consumers, clustered mostly in Dhaka Metro, believe in buying only the best products for their households. Their implied motto, as interpreted by qualitative interviewers, appears to be: “money is not a problem.”

Such segments are likely willing to pay large premiums provided the product or the brand is commensurate with their high standards of living and high expectations from the products / brands they pay for. However, there is not sufficient information to predict the probability of their acceptance of branded and premium-priced fortified rice.

In addition to the above, urban youth have emerged as important influencers of household category and brand choices. Though this 15-20 year-old group is not presently earning or purchasing rice, they will come to the fore over the next decade or so. Cause marketing (or brand activism) represents an effective funnel for engaging with younger audiences.

Based on strategy session discussions, the third segment has been deemed as lucrative but ultimately unsuitable for fortified rice marketing.

4.6 Segment Size & Value

Segment size in context of predefined parameters, means the number of consumers / consuming households that can be potentially served by the product. To calculate this, the formula below is employed.

<u>Estimated size of the segment:</u>

$$SS = \{(TP \times SSH) / HS\}$$

TP = total population of geographic unit
SSH = target households as a percentage of total households
HS = Average household size

Estimated segment value represents the money amount spent on the product by households that fall within segmentation parameters, over a one-year period.

Next, a formula is employed to estimate total segment consumption (of the product) and assigns a money value to it based on prevailing market prices.

Estimated value of the segment:

$$S\text{-}Val = [\{(TP \times SSH) / HS\} \times S\text{-}Vol \times PPU]$$

TP = total population of geographic unit
SSH = target households as a percentage of total households
HS = Average household size
S-Vol = annual volume of product purchased by households in the segment
SSH = product price per unit

The codes and their corresponding values are shown in the tables below, the first for segment-1, and the next for segment-2.

	VARIABLE	DHAKA DISTRICT	SIRAJGANJ DISTRICT
SEGMENT 1: INFORMED SHAPERS			
PGR	Population growth rate	4%	3%
TP	Total population	17,762,931	3,421,555
SSH	Segment share (%)	20%	20%
SP	Segment population	3,552,586	684,311
HS	Avg. Household Size (heads)	5	5
SS	Segment size (no. of HHs)	710,517	136,862
S-Vol	Annual consumption volume within segment (KG)	358,100,697	68,978,546
PPU	Price per unit (KG)	65	65
S-Val	Annual consumption value within segment (BDT)	23,276,545,331	4,483,605,518
	Annual consumption value within segment (USD)	273,841,709	52,748,300
$S\text{-}Val_{FR}$	Annual fortified rice consumption value within segment @ 10% of total (BDT)	2327,654,533	448,360,552
	Annual fortified rice consumption value within segment @ 10% of total (USD)	27,384,171	5,274,830

TABLE 15: Calculation of segment value

Total annual value of Segment-1 (Dhaka & Sirajganj) = BDT 2776,015,085
[In words: Bangladesh Taka twenty-seven hundred and seventy-six million per annum]

	VARIABLE	DHAKA DISTRICT	SIRAJGANJ DISTRICT
SEGMENT 2: NURTURING NESTERS			
PGR	Population growth rate	4%	3%
TP	Total population	17,762,931	3,421,555
SSH	Segment share (%)	10%	10%
SP	Segment population	1776,293	342,155
HS	Avg. Household Size (persons)	5	5
SS	Segment size (no. of HHs)	355,259	68,431
S-Vol	Annual consumption volume within segment (KG)	127,893,106	24,635,195
PPU	Price per unit (KG)	65	65
S-Val	Annual consumption value within segment (BDT)	8313,051,904	1601,287,685
	Annual consumption value within segment (USD)	97,800,610	18,838,678
$S\text{-}Val_{FR}$	Annual fortified rice consumption value within segment @ 10% of total (BDT)	831,305,190	160,128,768
	Annual fortified rice consumption value within segment @ 10% of total (USD)	9,780,061	1,883,868

TABLE 16: Calculation of segment value

Total annual value of Segment-2 (Dhaka & Sirajganj) = BDT 991,433,959
[Bangladesh Taka nine hundred and ninety million per annum]

These figures represent the ‘potential revenue flow’ should assumptions about population trends and purchase patterns hold up. The figure does not take into account costs of production, distribution, and promotions incurred by the marketer.

ASSUMPTIONS & NOTES

i. Population data is taken from HIES 2011 and adjusted for time assuming 3% to 4% urban population growth
ii. No in-migration or out-migration has been accounted for
iii. Income data has been estimated for FY 2020-21, by assuming annual 2% increase in nominal income
iv. Percentage income accruing to households by income decile is used as is from HIES 2011. There are indications that the gap between the top 10% earners and the bottom 10% earners has only widened over the past decade.
v. Segment share (SS) is estimated by deriving the total number of households with in the predefined segment income bracket.
vi. Average household size is assumed to be five (05)
vii. Annual rice consumption figure is derived from reported monthly consumption volume of all types of rice (approx. 42 KG), and a conservative estimate of 30 KG is used for the valuation
viii. Considering fortified rice as a specialty product (i.e. not the main staple), a 10% acceptance by segments is assumed

It is important to note that segment value is largely shaped by how the product is categorized. When categorized generically as ‘rice commodity’ – the segment valuation takes into account all rice related spending.

If categorized as ‘packaged rice’ and if packaged rice constitutes 10% of target households’ rice consumption, then the segment valuation will be derived from household spending on packaged rice only. Therefore, the narrower the product category, the lower the segment valuation.

4.7 Summary of Consumer Insights

KEY CONSUMER INSIGHTS	
RICE VARIETY ▪ Rice breed / variety is unchanged in short and medium term ▪ White, granular and fine-grained rice is preferred across segments ▪ Quantity, preferred outlet and budget are decided at the household level ▪ Commercial marketers beginning to tap high-value segments with premium brands / products	**PURCHASE DECISION** ▪ Husband and wife are key decision makers, with a role for mother-in-law ▪ Consumers do not consider advertising messages during ▪ Consumers do not evaluate or compare rice varieties / brands at retail purchase points ▪ A majority of consumers don’t seek retailers’ opinion when buying rice
CATEGORY DYNAMICS ▪ Modern consumers are making efforts to eat healthier ▪ They are still not too concerned with nutritional value or micronutrient contents ▪ Rice is assigned low nutritional value (as perceived) ▪ Visible metrics like gaining in weight, increases in height, or clearing of skin complexion are important nutrition signals	**CONSUMER PREFERENCE** ▪ Fineness / whiteness of rice grains is a sign of social status for consumers ▪ (Latent) consumer demand for value-added products is indicated by marketers’ foray into premium brands ▪ Consumer demand may be fueled by both health and status concerns ▪ There’s growing interest in organic or chemical-free products in general ▪ Fortified customers are especially interested in their children’s health

TABLE 17: Consumer findings and insights in Review

CHAPTER 05
RETAIL MARKET STRATEGY

Based on data collected from the demand-side and supply-side, this section proceeds to develop a retail market strategy for fortified rice. It further provides cues for operationalizing the strategy. In considering the challenge, the consultant has treated the product (rice fortified with micronutrient kernels) as fixed, and all other market actors, regulators, systems, enablers, and forces, as variables.

A retail marketing strategy is a evidence-based approach to using marketing tools to get consumers into a retail store and buy a product. Such a strategy usually has three salient features:

1) Geared towards retail driven profitability
2) Specific to product and producer
3) Focused on defined target segment(s)

As of this point, the stock product (though not its ontological superstructure) is defined. Also defined are two potential segments that may be profitably serviced by FR marketers.

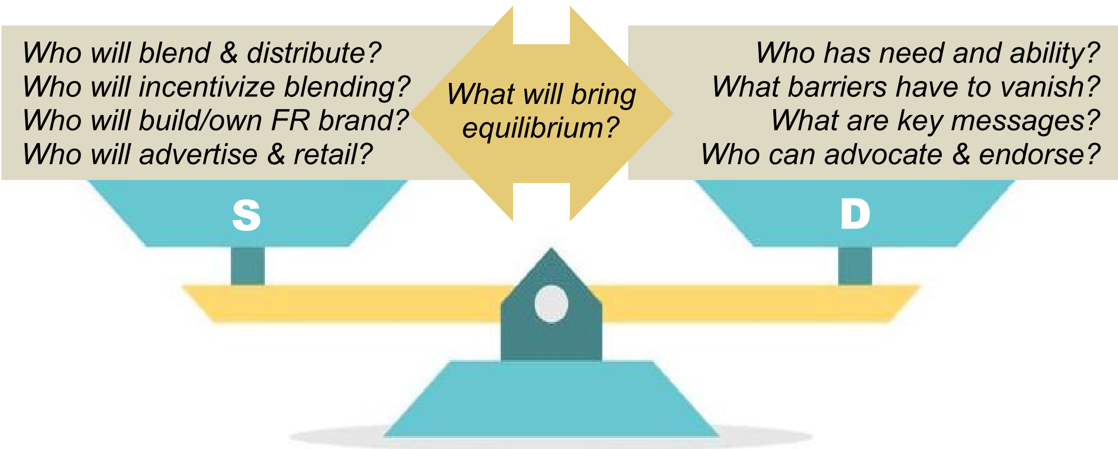

FIGURE 14: Key questions to be answered by the retail market strategy

Between the two, different types of supply-side actors are present, which may be reasonably expected to perform required functions that bridge the gap between product and the consumer.

Segment sizes and values as estimated in the previous section are indicative only of the ‘potential’ that exists in the market. How much potential is realized will determine the eventual penetration and profitability of FR.

The following section evaluates strengths and weaknesses of supply-side actors, and proceeds to develop conceptual models of how these potential segments may be viably serviced by supply-side actors.

5.1 Review of Supply-Side Actors

Through supplier / miller consultations and interviews, the consultant has developed thirteen critical functions that a future MFR marketer will need for success. Below, these functions are explained in brief, while the following pages use the functions as assessment criteria to evaluate suitability of different supply-side actors.

SL	TITLE	EXPLANATION
1	Track Demand	Collect demand data, forecast market demand adjusting for consumption trends, patterns, and seasonality for different breeds of rice
2	Source Paddy	Source paddy as per market demand data, from farmers or middlemen in regional markets
3	Finance Production	Ensure working capital by rolling, or availing of institutional / bank finance for batch production
4	Penetrate Consumer Market	Navigate stiff competition of commodity markets, obtain entry into local, regional and national markets (in increasing order of priority)
5	Process Rice	Mill rice as per specifications, ensuring look and feel demanded by targeted segments
6	Acquire Kernel	Seek out and purchase high quality and safe FRK from domestic / overseas suppliers
7	Blend Kernel	Blend FRK with different varieties of rice in the perfect measure, using streamlined production line
8	Brand & Package	Develop unique and memorable brand, visualize brand and develop packaging design and production
9	Distribute to Retail	Distribute packaged fortified rice to urban commercial hubs and grocery markets
10	Promote & advertise	Invest in generating and sustaining consumer demand so that distributors and retailers are increasingly interested to stock the MFR product
11	Finance Retail	Provide trade credit and/or financial incentives to distributors, as is the practice in commodity categories
12	Service Retail	Provide order-taking, delivery, inventory-tracking, merchandizing and shop organization support to retailers
13	Recover Dues	Recover credit amounts and sales proceeds from wholesalers and retailers in an ultra competitive, low-margin category

TABLE 18: Critical supply-functions needed for retail marketing FR

In the next page, the above criteria are used to gauge how capable the different supply-side actors are in terms of retail marketing fortified rice. Green color is used to denote existing capacity, while red is used to record lack of known capacity. Yellow color is used to indicate indeterminate status.

TABLE 19: Supply-side actors' capabilities review

CORE FUNCTION / COMPANY	Track Demand	Source Paddy	Finance Production	Penetrate Retail Market	Mill & Parboil	Acquire Kernel	Blend Kernel	Brand & Package	Distribute to Retail	Promote & advertise	Finance Retail	Service Retail	Recover Dues
ACI pure													
Igloo Bangladesh													
PRAN foods													
Aarong													
Rupchanda													
Teer													
Masafi agro food industries													
N.K foods													
Rashni rice mills													
Al-Hera auto rice mill													
M/S R S Color Sorter Auto Rice Mill													
M/S Munshiganj F&A Industries Ltd.													
M/S Bhawal Auto Rice Mill													
M/S Astha Feed Mill and Agro Complex													
M/S Shohagh Auto Rice Mill													

5.2 Conceptual Delivery-Models

Based on the brief review of producer manufacturing, financing and retailing capabilities, three conceptual delivery-models are developed next.

5.2.1 Corporate Marketer Model

To refresh memories, ‘corporate marketers’ are large, corporatized entities that are currently in the business of branding, distributing and marketing rice. Examples include ACI, PRAN, Square Foods etc.

In this model, corporate marketers’ brand equity, retail distribution network, and marketing capacity are leveraged to market fortified rice. Each of these three things – most critical for successful MFR marketing – have been developed over several years, and have required considerable financial investment. The brand (intellectual property), distribution network, and evolved marketing operations are unique competitive advantages that cannot be easily appropriated or mimicked by competitors or new entrants.

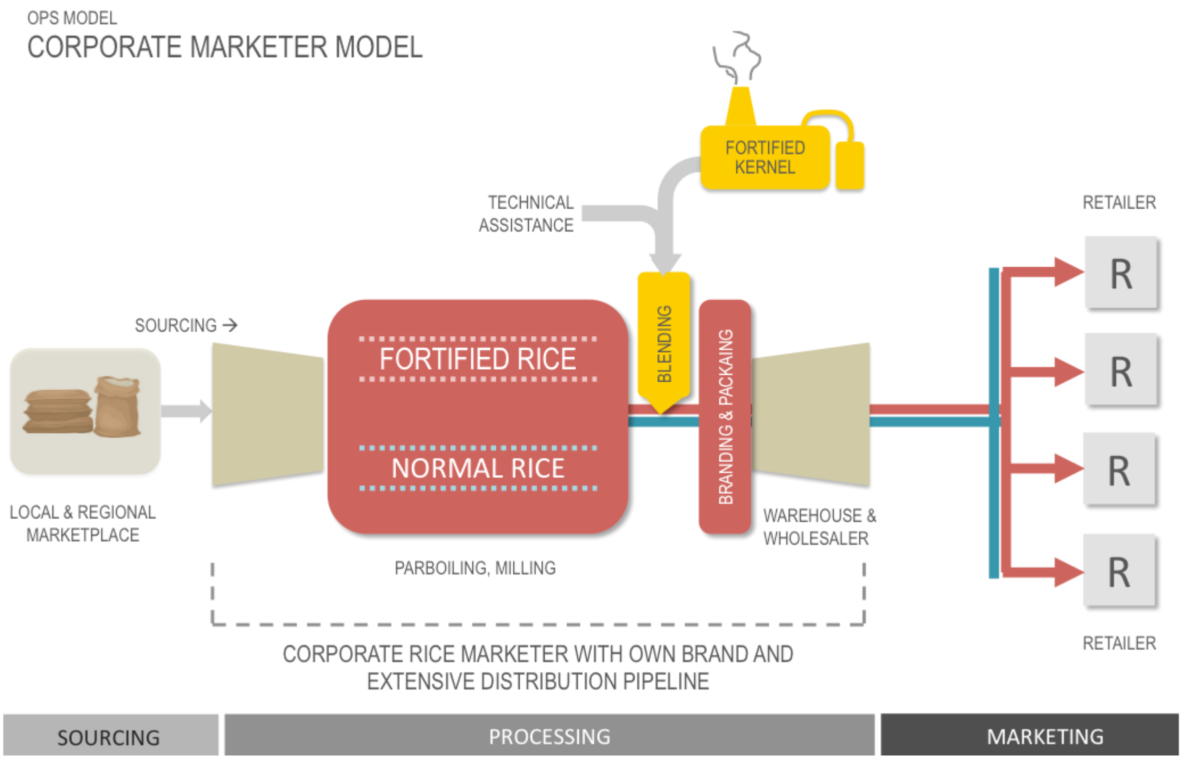

FIGURE 15: Corporate marketer led model for retail marketing of fortified rice

As such, this model proposes to use advocacy and technical assistance to induce existing rice marketers to add a ‘fortified variant’ to their existing and trusted rice brands. As there is discernable efforts by these corporations to explore new upmarket segments by introducing premium and/or specialty products – such brand extensions are clearly within their overall portfolio strategy. If it can be realized, this will be the most promising marketing model for FR.

5.2.2 Hybrid Model

The hybrid model combines elements of the two preceding simulations, to devise a third conceptual model. This is posited as the second-best conceptual model.

In the hybrid model, SME millers are utilized for fortified rice production, and corporate marketers are placed in charge of distributing and marketing the product. It thus combines the capabilities of both sets of supply-side actors to come up with a design that has the potential to work for all parties.

The main feature of the model is that corporate marketers (that might be reluctant to embed new parts / processes in their production lines) can simply outsource milling and blending to SME millers, which are already experienced in MFR production. Paddy or grain sourcing can be done by either actor in this scenario.

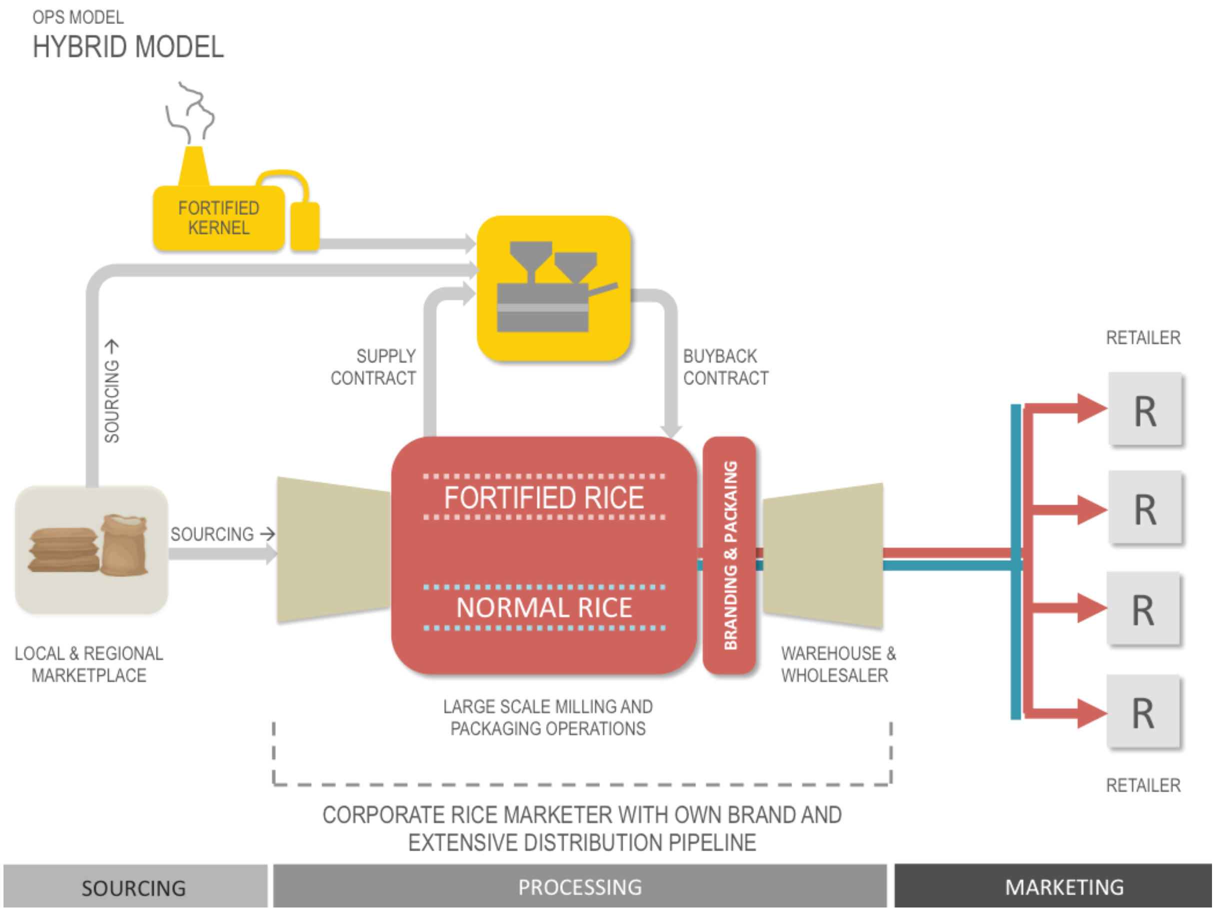

FIGURE 16: Hybrid model for retail marketing of fortified rice

In this model, SME millers thus act as sub-contracted suppliers to large marketers. This means that both types of organizations end up leveraging their respective capabilities to scale-up distribution and marketing of fortified rice.

Potential challenges might arise around manufacturing dependence and outsourcing of quality control procedures. Usually, large corporations tend to retain control of critical supply functions. Therefore, the hybrid model may eventually prove to be a medium-term solution – that will eventually mature into a corporation-led system.

5.2.3 Miller Franchise Model

This marketing model centers on SME millers, e.g. millers currently producing Pușți Chāl. This is the model to be pursued should the first prove impossible to realize.

This model leverages existing SMEs with industry linkages, blending knowledge, requisite machinery, and proven experience of producing fortified rice. Due to the comparatively smaller size of these enterprises and due to their lack of market muscle and access – it is likely that their operations will be geographically limited.

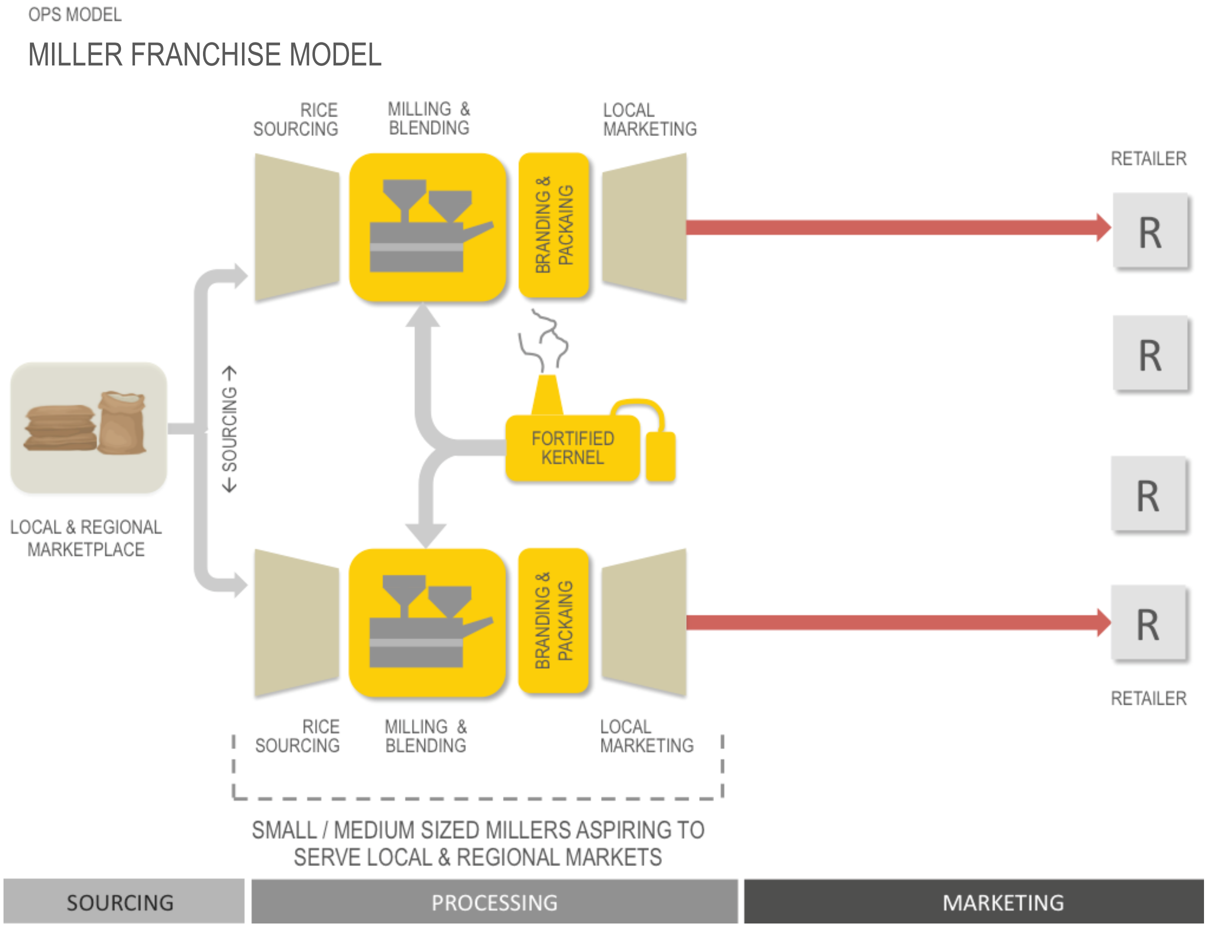

FIGURE 17: SME-based model for retail marketing of fortified rice

As will be seen in the supply-side capabilities assessment, small or medium millers typically operate on the manufacturing – and not the distribution-marketing – end of the rice market. Therefore, they possess low or no capacity for collecting, analyzing and responding to market intelligence.

Should a countrywide network of SME millers unite under an umbrella brand to produce fortified rice – then some of these challenges can be overcome. For example, such enterprises will then have the option of pooling resources to procure centralized marketing intelligence and services.

5.3 Retail Marketing Planning

Having explored supply-side organization and incentive structures The most common planning model for commercial marketing is the 7Ps Marketing Mix model. It begins with the product, encompasses the organization, and lastly ventures into knowledge functions.

IGURE 17A: Marketing mix as per the 7P Model

5.3.1 Product Design

Fortified rice is a versatile product concept. Any variety of rice can be blended with kernels to produce fortified rice. The grains are at the heart of the physical product. Consumers clearly prefer white, polished, fine-grained rice. In fact, they may actually view such varieties as a status symbol. This is corroborated by demonstrated, positive correlation between household income and the shift towards fine-grain rice (GAIN 2017). Thus this is the type of rice that should be fortified.

> Visible kernels in fortified rice have given rise to challenges in the past. Consumers have been confused about the ingredients of what many mistook for ‘dead grains’ or ‘plastic grains’, i.e. fake grains.
>
> Product design must embrace visible kernels in the mix, and turn it into a strength. For example, it can be promoted as a way of recognizing fortified rice at the retail point. Eventually, consumers should become habituated to expecting and demanding fortified kernels in their rice.

5.3.2 Packaging

Modern premium brands of rice come in highly attractive packaging, accompanied by product literature. For rice, the packaging should have a slit or window so that the product is always visible.

During the pilot campaign, the 5 KG pack was reported to be the highest selling one. In addition to that stock keeping units (SKU) of 1 KG and 2 KG are recommended. Smaller pack sizes will lower the risk for consumers, and make purchase decision easier (due to lowered stake).

Inclusion of product literature – on packaging or on separate flier – will help keep leads warm. Every product pack must contain links or directions to outlets, e-shops, online information sites, and a fortified rice helpline.

5.3.3 Product Pricing

It is particularly important to understand the relationship between rice varieties and (perceived) social status. Consumers buy premium rice brands more because of brand association than any special attribute of grains. Many premium brands advertise brands identical to those available in open markets. Yet consumers are willing to pay BDT 5 to 10 per KG for this premium brand.

Survey results show that a large portion of the target segment is prepared to pay different levels of premium for a superior product.

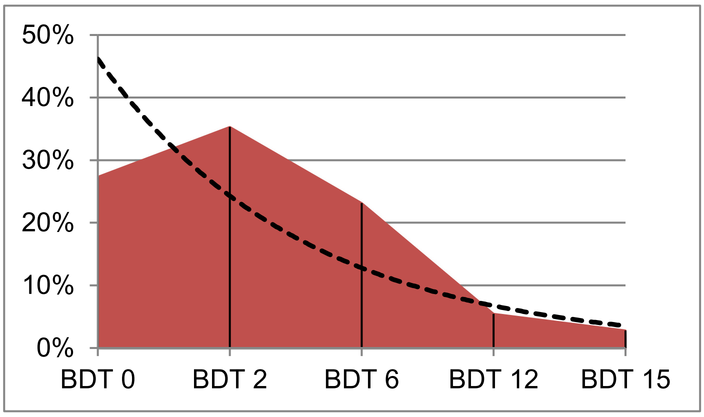

***FIGURE 18*: Willingness to buy at different levels of premium pricing (additional per KG)**

Without forgoing profitability, pricing must be easy on the consumer at the trial generation stage.

Most new upmarket brands unintentionally forego trials by potential consumers by pricing themselves out of the consumers' reach. Even at break even, marketers should consider ways to remove barriers from the consumers' path.

Considering that fortification may add BDT 3 per KG to the cost of production, a premium of BDT 6 may be considered further. At this price level, nearly 35% of respondents have expressed willingness to try the product.

It is recommended that marketers enter the market with low prices, instead of entering with a moderately high price, lowered after a period of business. Such actions convey the impression of price skimming, and may create negative feelings about the brand.

It will be useful to remember that at some point, the bio-fortified variety of rice will also start competing for the same segments and mindspace. Given that bio-fortified varieties are currently under scrutiny by corporate rice marketers like ACI, this competition should be anticipated.

5.4 Brand Strategy

The brand is not about micronutrients, fortification, or even about rice. The brand is concerned with the consumer, her struggles, her ingenuity, and her creativity. The biggest risk for brands is to become self-congratulatory about its own feats.

5.4.1 Brand Architecture

The commercial marketing of fortified rice is a joint vision of the Government of Bangladesh and development partners like Nutrition International, the Global Alliance for Improved Nutrition or the World Food Programme. The first brand-related stipulation for MFR is that it must be distanced from the existing 'Puṣṭi Chāl' identity, the rationale for which has been stated before.

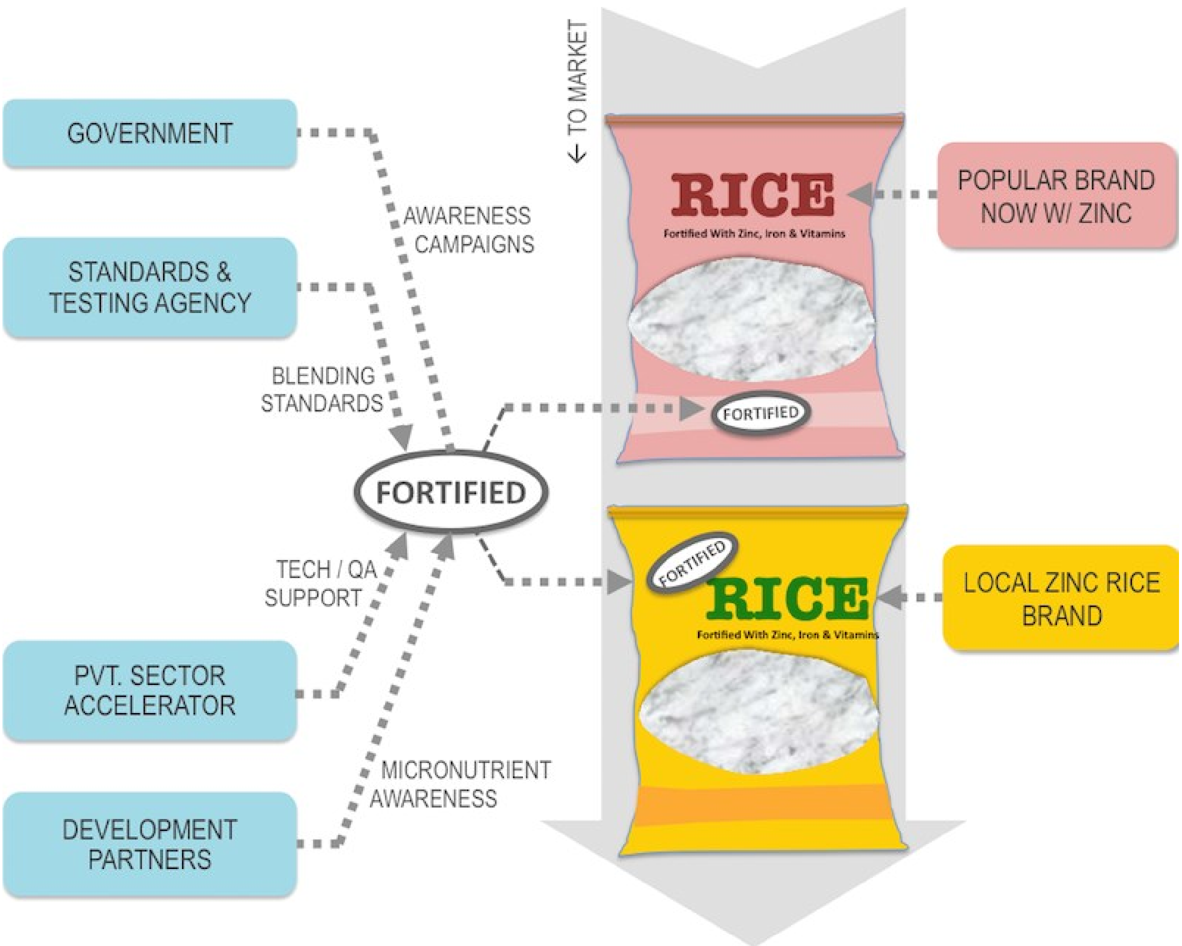

FIGURE 19: Investing in a fortification brand

The new brand is conceived as market-driven, i.e. implemented by market actors and governed by market forces. It intends to cater to upmarket consumers. It could therefore warrant a new brand, franchised out to interested producers. Or it could be symbol of standardization and quality, leveraged by existing brands in the market.

The first approach is suited to new entrants, which command no existing brands. The second strategy may be applied to all types of producers.

Alternative Brand Architecture

An 'orphan brand' is a brand without parents or guardians. It is a brand that no one expressly claims a stake in. One of the many ways in which a brand is orphaned is through a combination of development-lensed strategy, and inherently unstable architecture.

Umbrella brands created for informal alliances of market actors and/or industry associations have a tendency of devolving into orphan brands. This appears to be especially true once external assistance from government or development partner(s) is withdrawn. While a few initiatives like Milk Vita (dairy association) may be considered in this regard, these are most likely exceptions to the rule.

The development sector of Bangladesh has witnessed the rise and fall of such brands in many categories, including business services e.g. freelance accounting services (national, 2005), wooden furniture (Jashore, 2007), local government associations (national, 2014), clean cookstoves (Dhaka and Khulna, 2016) etc.

Inequitable contributions, freeloading members, and weak governance and enforcement authority threaten the very architecture of such brands. But the most salient reason is that profit-driven companies frequently do not share or believe in the development perspective, since their end goals are not aligned.

Dangers of an Orphan Brand

An 'orphan brand' is a brand without parents or guardians. It is a brand that no one expressly claims a stake in.

Umbrella brands created for informal alliances of market actors and/or industry associations have a tendency of devolving into orphan brands. This appears to be especially true once external assistance from government or development partner(s) is withdrawn.

But the most damaging reality emerges when producers / marketers do not believe in the product concept, or the marketing approach.

Should FR retail marketing advance through joint efforts of SME millers, ensuring the following elements is recommended:

a) A strong, unique and trademarked franchise brand
b) A strong business case for potential franchisees
c) Agreed upon quality standards and branding guidelines, and
d) Brand owner(s) capable of enforcing franchise contracts

5.4.2 Fortified Rice Brand: SWOT Analysis

FORTIFIED RICE

STRENGTHS	WEAKNESSES
▪ Strong government policy support ▪ First fortified rice in Bangladesh ▪ Adaptability to any rice variety ▪ Visible kernel presence in rice ▪ Backed by solid evidence ▪ Success stories in many countries ▪ Existing production capacity and experience	▪ Producers not equipped to operate in commodity / retail markets ▪ Low / no capacity for market intel and insight mining operations ▪ Likelihood of prolonged time-to-market (TTM)
OPPORTUNITIES	**THREATS**
▪ No local fortified brand ▪ Consumers want premium options ▪ No clearly-positioned premium brand (other than 'aromatic') ▪ Dual income households spending on brands that 'speak to them' ▪ Great way of ensuring children's growth, elderlies' immunity ▪ Scope to create intra-producer knowledge sharing work groups	Competing premium and/or fortified brands in the pipeline ▪ Premium and/or fortified brands targeting similar segments ▪ FR's perceptual link to Pushti Chal can mar brand image ▪ New producers are discouraged by SME Millers' retail struggles ▪ Millers lack of capacity to handle service requests creates dissatisfaction

FIGURE 20: SWOT Analysis of the fortified rice (retail) brand

5.4.3 Brand Benefits

It is common for marketers to strategize beginning from functional benefits. Two types of benefits are explored below as a demonstrative exercise. Then a benefit extension tree is developed in the following page.

Functional Benefits
At the root of the tree are physical ingredients (micronutrients) that deliver a straightforward, rational benefit (immunity boost). But human brand preference and purchase behavior is not entirely rational.

Benefits that a product delivers, and benefits that a consumer derives are often mismatched and divergent. This is because producers tend to concentrate on the 'production and product' side of the transaction – while the consumer contextualizes her emotional response in light of her own reality.

Emotional Benefits
When zinc delivers immunity boost, the consumers' anxiety subsides, and her confidence grows. Therefore, she feels as though she is capable of taking greater risks, and doing more. In doing so, her belief in herself grows stronger, and this is reflected in feelings of self-actualization.

Another type of emotional benefit can be drawn from a premium, high quality brand. High-value brands are popular because they make consumers feel as though they are worthy of the brand, and vice versa. It tells her friends about the kind of choices that she makes. It can assert that when a genuinely good product or admirable brand is on offer, she does not hesitate over the price.

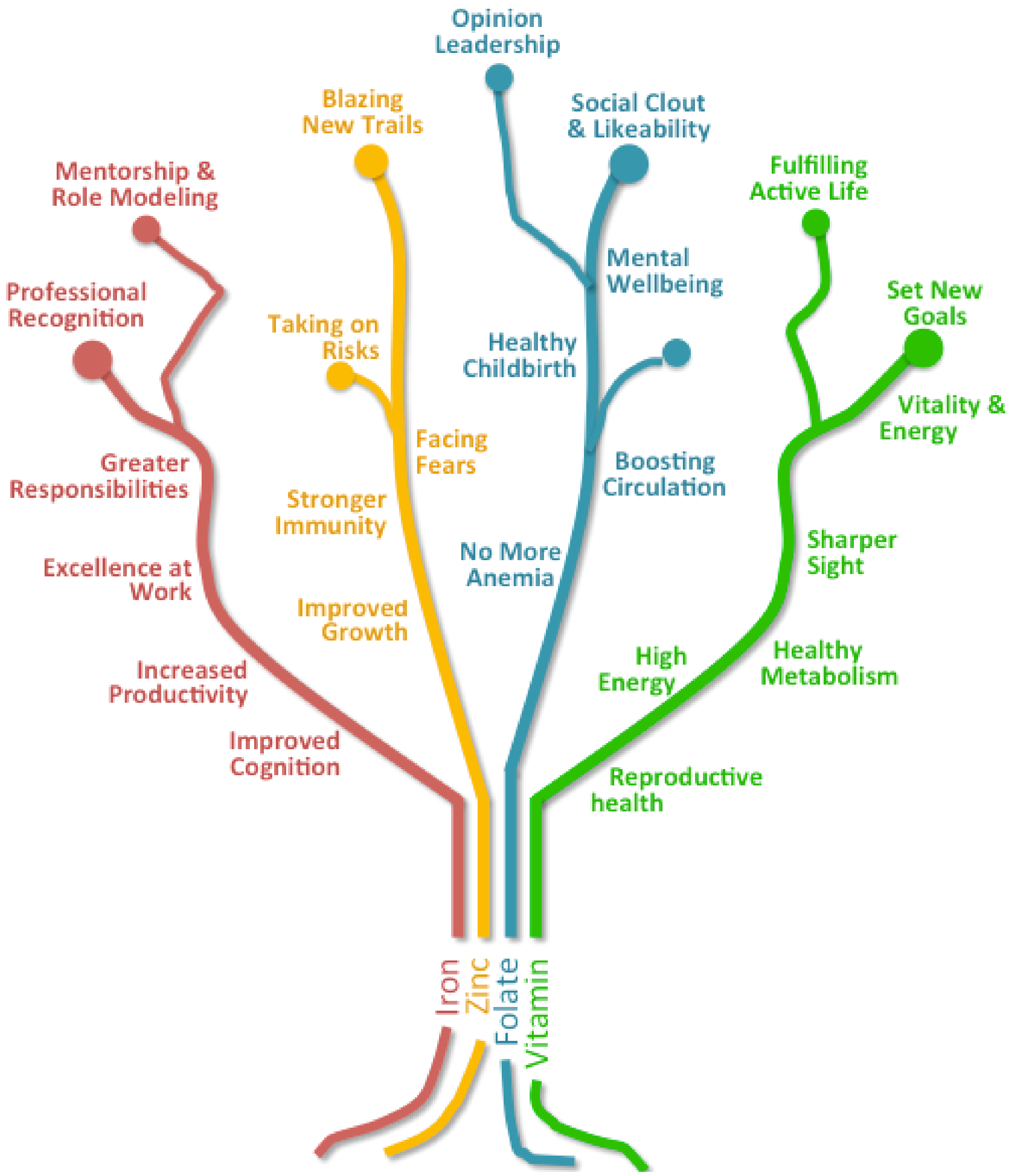

FIGURE 21: Bridging functional benefits and emotional brand promises

5.4.4 Brand Positioning

The grand consensus among survey respondents is seen in responses about future dreams and ambitions. Most respondents cited ‘improving lifestyles’, ‘investing in posterity’, or ‘acquiring own house’. Retailer interviews reveal that consumers who bought fortified rice mentioned ‘children’s health, nutrition and development’ as their primary motivating factor. Therefore, rice suited to growing bodies (covering pregnant women as well) is a positioning area that has not been claimed by another brand.

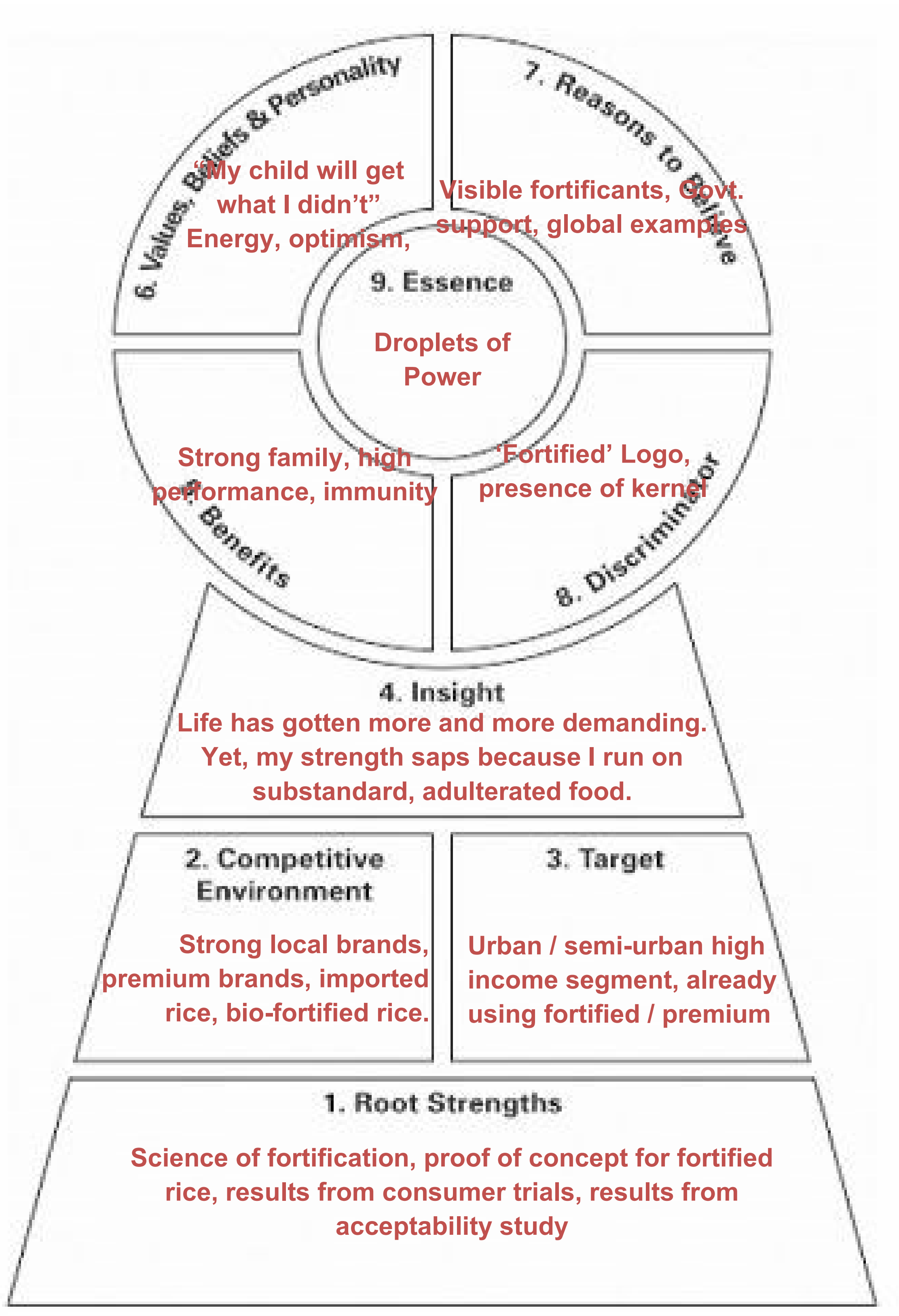

FIGURE 22: Brand positioning and strategy

Droplets of Power

In Bangladeshi middle-class culture, frugality is an admired skill, and wastage is looked down upon. When mothers try to feed their children, they insist that not a single grain of rice be wasted. To achieve this end, mothers have devised a theory using facts of their own choosing:

> *All the world's strength hides in the last drop / grain.*

This humble testament to frugality and conservation is a defining character of the middle and upper middle classes. Every toothpaste tube is rolled up and squeezed, till the last dollop has been extracted.

With fortified rice, the old wives' tale has come true. After every 99 grains, comes that special 'magic grain' that enhances growth, strength, vitality and immunity. In fortified rice, these special, little kernels are the droplets of power.

5.4.5 Brand Credibility

The challenge for new brands is that they have to start out with zero credibility in the marketplace. This will likely be the case for the FR brand as well. Consumers will question:

- Why should any Bangladeshi take risks with rice? Everything else can be experimented with, but not rice.
- Why does this rice look so odd? What is mixed in to the rice? Consumers have not seen rice containing foreign particles that were good for health. Picking out tiny pebbles and granules used to be a mother's daily chore – till milled, white rice arrived. Why should consumers switch from a product that meets their needs?
- Who says there are really micronutrients in the kernel? All products claim to contain some miracle, proprietary technology or ingredient that make them different and special.
- How do we know the dosage is right? How do we know that the premium is justified by the cost of adding kernels?
- Most importantly, who testifies to its safety and health benefits? How credible are those who endorse the product?

Leveraging Credible Brands

New brands would do well to leverage credibility of other brands (e.g. soap, TV channel, celebrity face, reputed institutions etc.).

- Logo of or seal of approval from the Government of Bangladesh emerged as the top factor that would remove consumers' hesitation about a good or service.
- PR and media exposure (perceived as unpaid coverage) boosts brand credibility as well. Television or magazine features, executive interviews,
- Presence of international development partners' logos is a source of assurance for consumers.

- Testimonials from ‘clean’ celebrities give consumers the impression that if XYZ celebrity is endorsing the brand, then it must be genuine.
- Top executive branding is a way of getting executive officers make public appearances and/or deliver talks before audiences. Persona and clout of chief executives can lift a brand in the eyes of the consumer.

5.5 Brand Content

Brand content is a vast set of textual, visual, audio, experiential, or virtual messages that combine to convey a unified brand image. Major types of contents are discussed below, with the caveat that brand content cannot be meaningfully covered with finite lists. Most brands will develop both Bangla and English version of contents intended for urban, upmarket brands.

As the figurative bridge between the supply and the demand sides, the FR brand will need in its repertoire target-wise content, along with channels for dissemination.

5.5.1 Product & Identity Content

This class of content is the most basic, entailing detailed information about the product, invention or development, ingredients and dosage, manufacturer(s), product usage guidelines, storage cues, etc.

TITLE	ILLUSTRATIVE TOPICS
Boilerplate text	Succinct definition in one sentence, without using technical terms, jargons or abbreviations
Product Literature	Product definition, product image, micronutrient dosage information, chemical description, authorized manufacturers, brand owner, contact information
Functional Benefit(s)	Evidence-based list of benefits, including data sources;
User Guide	How to use product, how it tastes, suitability by age-groups, what to expect, possible side-effects, precautions against side-effects etc.
Scientific Data	Excerpts of scientific / controlled trials, international conference paper summaries, visualized scientific data, conference abstracts, PowerPoint presentations etc.
Context information	GDP loss from malnutrition, prevalence of micronutrient deficiency, health impact etc.
FR Around the World	List of countries with FR, brand names, product photos, literature / advertising materials, brand ambassadors etc.
Crisis Communication	Press-kit containing factsheets and photographs of scientific and quality-control measures, raw material quality control, blending protocol, hygiene standards, side-effect disclaimers, etc.
‘About Us’	Organization legal information, proprietary technologies, intellectual property rights, brand trademarks, board members, organizational health info, basic financial information, job opportunities, partnering opportunities etc.

TABLE: Common types of product and identity content

5.5.2 Consumer Content

Development of consumer content is naturally the most extensive exercise. Consumer content is best planned according to the stages of graduation along the consumer journey. See visual representation of the typical consumer's journey from apathy to advocacy in the next page.

FIGURE: 5-stage customer journey and media touchpoints

While it is impossible to develop all content in advance, preparing contents for the first two stages of the customer journey is recommended. Some sample contents are discussed below.

TITLE	ILLUSTRATIVE TOPICS
Frequently Asked Questions	List of most common consumer queries and authorized / standardized responses (see box below)
Trigger	Emotive copy, provocative questions, counterintuitive statements, attention-grabbing factoids, opinion polls, social media games, brain twisters, quizzes, etc.
Opportunity Cost	Financial estimates and projections of costs related to deficiencies, impact summaries, cost-benefit analyses etc.
User Imagery	Photos, illustrations or animations of brand users, the setting, slice-of-life photos, (consumption vs. life)
Consumption Moments	Photos of purchase situations, bringing monthly bazar home, couples' cooking, family cooking, dining table moments (but not actual eating of rice) etc.
Touchpoints (online, offline)	List of brand assets, platforms and properties – including map of retail outlets, website, social media platforms, online ordering mechanisms, delivery details, contacts etc.
Endorsement	Approved quotes from bureaucrats, development experts, ordinary cooks, celebrity chefs, scientists, nutritionists, national celebrities etc.
Brand	Brand slogan, payoff line / strapline, key impact figures, summaries of scientific data etc.
Packaging Labels	Fortified logo (if any), micronutrient dosage information, manufacturing and expiry dates,

Contrary to popular belief, brand image is not constructed through advertising alone. Brands acquire reputations and anthropomorphic images through every aspect of its business operations. Therefore, the central brand story or theme needs to be crafted with care, and followed to the letter.

CHANGES IN THE

Brand Mythology

Brand mythology is the larger story behind a brand. It is like the canvass against which other stories are contextualized.

Presently, the mythology of fortified rice is rooted in Pushti Chal's success during the pilot. All subsequent FR literature has accepted 'Pushti Chal' as the prequel (to the future FR brand mythology).

But this is not the FR brand's story.

The commercial FR brand, its content and its stories are for the consumer. And as far as the consumer is concerned:

- Pushti Chal and commercial fortified rice aren't the same product
- The FR brand has not evolved from the Pushti Chal brand
- The two do not serve the same consumer needs

The FR brand story should start with the consumer and her needs.

It is important to understand the implication of distancing a brand from certain connotations. As mentioned earlier, the recommendation is that fortified rice not be (perceptually) with pandemics, diseases, or old age. This rules out linking consumption benefits specifically to COVID-19, both because of the negative association of any pandemic.

Brand Colors and Photography

The FR brand can adopt candid, slice-of-life type photographs in urban settings. Capturing images in natural sunlight is preferred. A signature style of image manipulation or embellishment may be explored.

For design, the brand should adopt a food-grade color scheme. Key colors in this category are yellow, orange, green, mauve, violet, and silver. Fluorescent or harsh colors are to be avoided.

As for imagery, user imagery is crucial for brand building. Brand user imagery answers the question, 'What sort of people use this brand?' Therefore, it is important to convey a unified, curated image of the ideal brand user / user-family. Examples of photography guidelines include:

- Using 'real people' in everyday attire
- Using known celebrities only for endorsements
- Avoiding images of plates of rice, or people eating rice
- Ensuring formal consent has been obtained from photography models
- Ensuring ethical sourcing of artwork and due compensation to creator

Illustrative Content | Frequently Asked Questions

What is fortified rice?
Fortified rice is rice with eight added vitamins and minerals— iron, vitamin A, B1, B3, B6, folic acid, B12, and zinc, to improve its nutritional content.

Do you prepare it differently?
No. You can rinse the rice before cooking in exactly the same way as traditional rice, without the vitamins being washed off. Fortified rice is cooked in exactly the same way as traditional rice and can be safely stored in dry conditions for 12 months, just like traditional rice.

Does it taste the same?
Yes! When fortified rice is cooked, it has the same taste, color and texture as traditional rice. No matter what rice you prefer, you can continue to enjoy that taste with added benefits.

Is fortified rice genetically modified?
No, fortified rice is normal rice mixed with fortified kernels at a 99:1 ratio to fortify traditional rice grains. The fortified rice kernel (FRK) is made from rice flour and vitamins and minerals, which are combined, to look and taste like traditional rice.

Does fortified rice cost more than traditional rice?
Retail prices for fortified rice are set by private enterprises, but the fortification process adds to the cost of producing rice. Producers have to buy micronutrient kernels at a cost, which typically increases the price. But usually this amount is justified by the quality of the product. Most of our consumers are willing to pay a little more for extra health benefits.

Information source: PATH (non-profit), Myanmar
https://www.path.org/resources/introducing-fortified-rice-myanmar/

5.6 Fortified Rice Around the World

In Brazil, the usual development model was dropped in favor of transferring technology rights to a leading rice-miller, Urbano and other interested private companies. Empowering local industry and adding credibility to the fortified products, this approach was also an important test of the public health impact that a purely market-based approach to fortification could have.

FIGURE 23: International logos and symbols associated with fortified rice

In Myanmar, fortified rice producers are certified by the National Nutrition Centre (NNC) and the Food and Drug Administration (FDA). Fortified rice is available in large supermarket chains such as City Mart and Ocean Supercenter, and minimarts such as G&G.

Modern approaches hold that the industry (commercial outfits that stand to gain from consumer acceptance of zinc-fortified rice) must invest in awareness creation and demand generation.

Another example comes from neighboring India. According to Ms. Rohini Saran, Deputy Lead, Fortification Programme, FSSAI, “With fortification, the challenge we often face is a chicken and egg situation. The businesses say that there isn’t enough demand and the people say there isn’t enough supply. […] So we are asking businesses to proactively start their own marketing campaigns.”

Thus in India too, onus has been placed with commercial firms – who are the experts of segmentation, targeting, and penetration through trial generation. Both country cases appear to be commensurate with the approach developed thus far.

5.6.1 Product Endorsement Example (Brazil)

FIGURE 24: Promotional poster for fortified rice in Brazil uses celebrity endorsers and a UNICEF animated ambassador to promote the Vitaminado brand.

5.6.2 Product Advertisement Example (India)

FIGURE 25: Product Advertisement Example (India)

5.7 Retail Marketing

5.7.1 Focusing the Marketing Effort (Heat Map)

Since the study was limited to two districts only, survey data was not sufficient for developing a marketing heat map. Therefore, secondary data has been used to identify high-potential regions or clusters.

CRITERIA	PROXY INDICATOR
Robust urban infrastructure	Infrastructure such as supply gas transmission lines helps identify mature urban centers and flourishing suburbs.
High literacy rates	Indicates presence of segments most likely to understand and appreciate fortification and its role in improving public nutrition.
Commercial activity	Financial service centers, e.g. commercial bank branches often signal flourishing local economies and commercial activity, from which such branches hope to generate business.

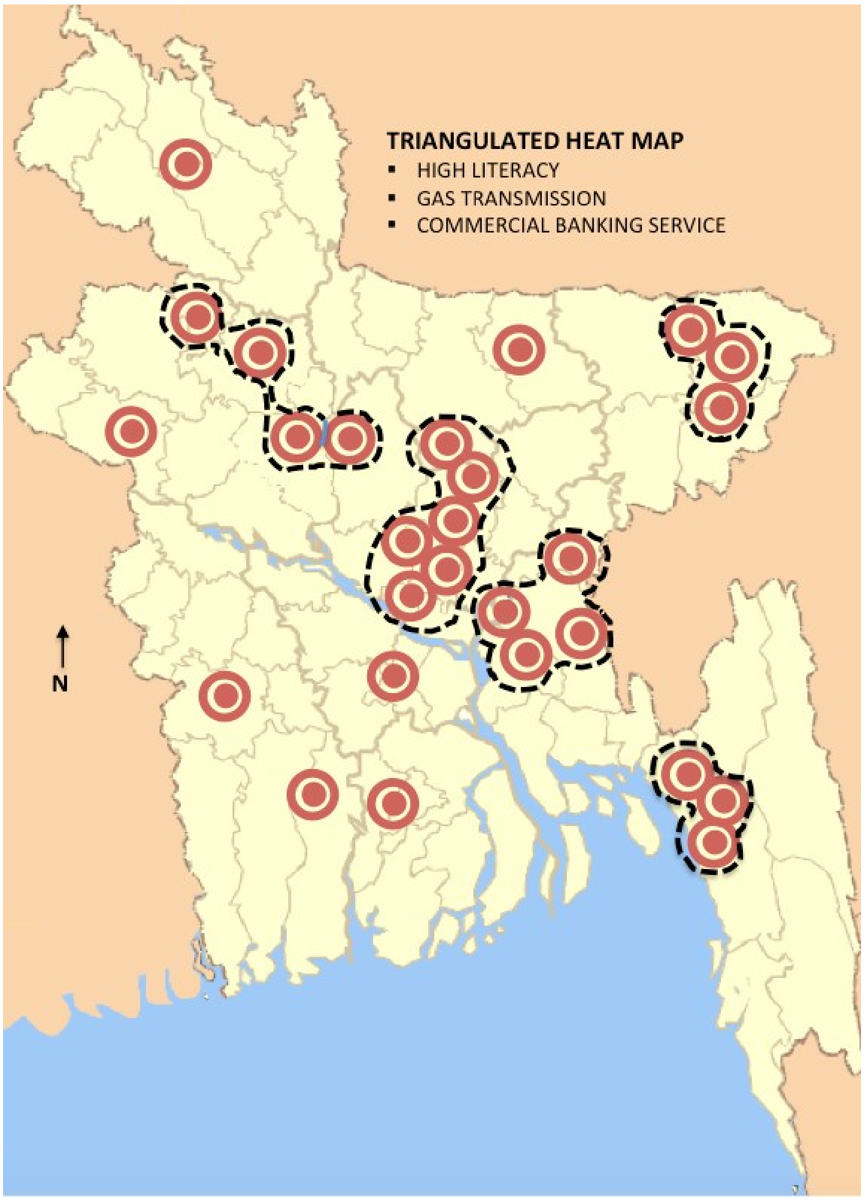

FIGURE 26: Marketing heat map based on three proxy indicators

Five major zones of intersection can be identified from the heat map. These are:

1) Zone-1: Bogura-Sirajganj Region
2) Zone-2: Sylhet-Sunamganj Region
3) Zone-3: Dhaka-Gazipur Region
4) Zone-4: Kumilla-Noakhali Region
5) Zone-5: Feni-Chittagong Region

These zones or market clusters are designated as high-potential markets for fortified rice. The zones also cluster with location of smartphone (handset) service centers, which are typically set up in districts with large user bases with high service demand.

5.7.2 Pinpointing Target Segments

Segment-1: Informed Shapers
Most probable locations: places similar to Dhamrai, Green Road, Mohakhali, Postogola, Rajabazar, or Savar of Dhaka district.

Segment-2: Informed Shapers
Most probable locations: places similar to Bashabo, Dhamrai, Green Road, Khilgaon, Mirpur, Mohakhali, Mohammadpur, Nababganj, Postogola, Rajabazar, Rampura, Savar, or Tejgaon of Dhaka district and Sirajganj Sadar of Sirajganj district.

5.7.3 Retail Marketing Strategy

First lesson from this study is that consumers do not switch around between rice breeds or varieties. Therefore FR brand should not attempt to convert fine-grain consumers to coarse-grains, or vice versa. As is the norm in the category, rice demand must be allowed to be shaped by the consumer.

Trial Generation
The key focus for FR marketers should be to 'generate trial'. Common trial generation tactics include:

TRIAL TACTIC	EXAMPLE
Consumer promotions	Free sampling, discounted offer, games of merit, free giveaway offer, buy & get free offer, coupon redemption schemes, social media user contests etc.
Retail push	Special retail margins, volume targets, merchandizing
Hype creation	Celebrity surprise visits, ground activation, lucrative lottery (games of merit)
Sampling	Sampling at retail points, sample-bundling with a popular brand (as free giveaway)

Given that the typical household buys three kinds of rice, the FR product has ample opportunity to enter households alongside the staple (instead of intending to eat into its share, i.e. cannibalize the staple rice). This could mean that the fortified rice initially starts out as a specialty brand, with a view to gradually gaining stronger footing in the household.

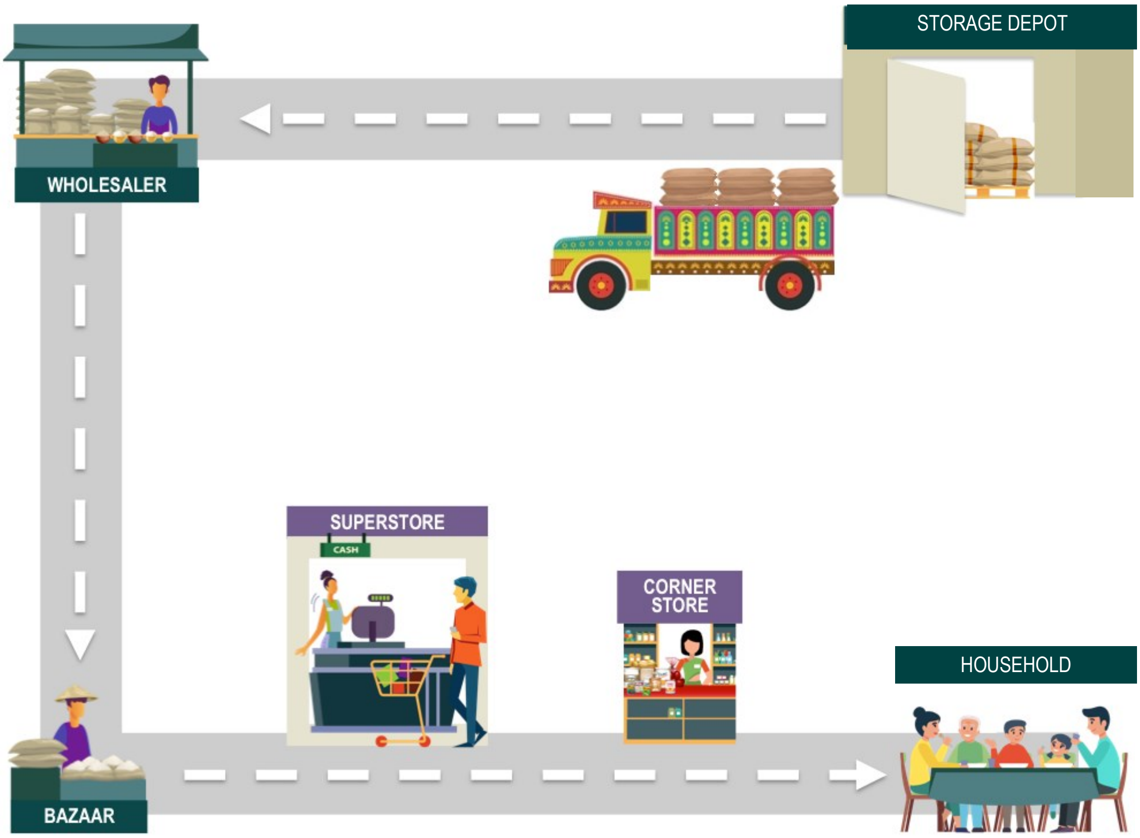

FIGURE 27: Common wholesale and retailing points for average consumers

The figure above shows how a particular household may make rice purchases from five (or even six, counting grocery delivery services) sources. Sources vary the most based on purchase volume.

5.7.4 Media Strategy & Mix

The consumer survey shows low / no use for radio, newspaper and magazines. These three media channels, once mainstays of urban advertising, have been replaced by the ubiquitous mobile phone. Media platforms important for a mass market premium food brand are discussed below.

Television
Television viewership stands at 76% in the sample, with most consumers watching their own television (many Bangladeshi viewers watch TV programming on neighbors' televisions).

While consumers do not base rice-related decisions on TV advertisements, television programming has an important role in shaping opinions regarding the value of fortified rice. News reports, spot reporting and other media PR activities will certainly help build brand credibility.

Consumers' preferred programs are news, television drama, and reality shows. Recommended primary slot for television insertions are between 8-10 am, 11 am to 2 pm, 3 to 4 pm, and 5 to 6 pm.

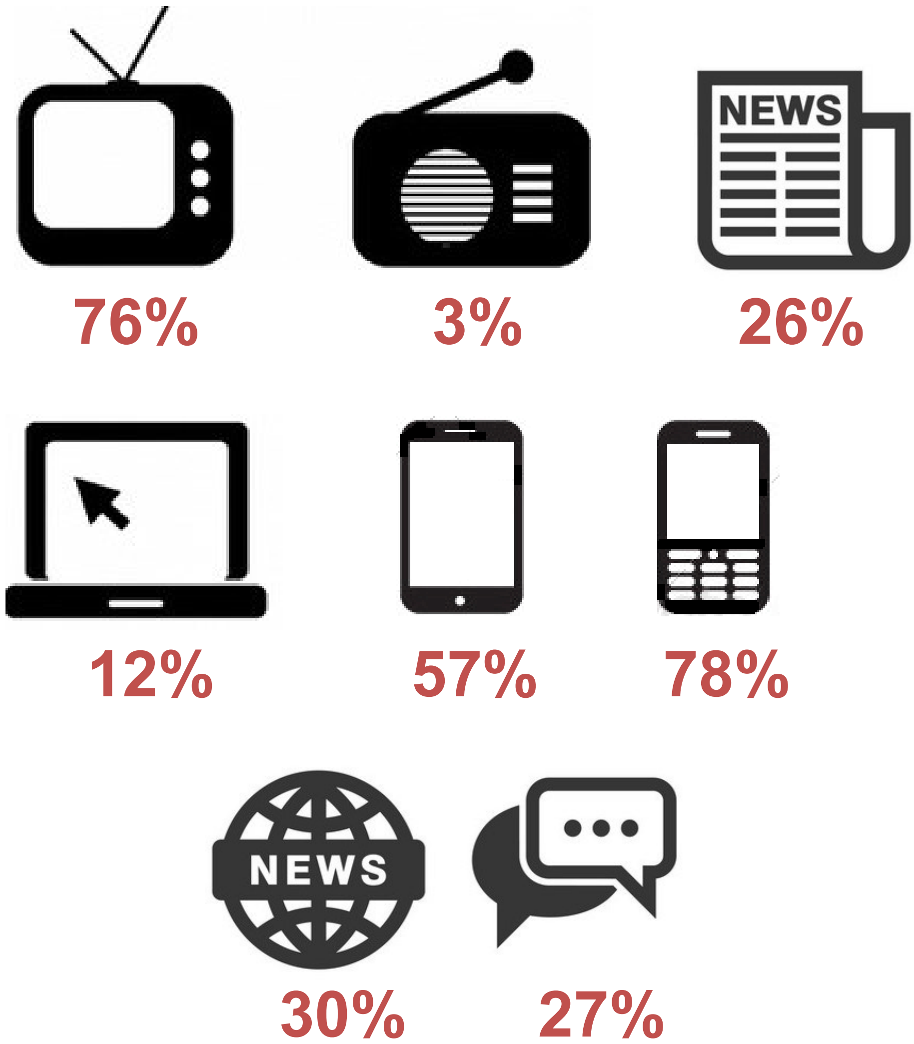

FIGURE: Consumer access and utilization to popular media platforms

Newspaper and Magazine
Overall newspaper readership is 26 per cent. Newspaper readership (including online reading) is higher in urban metropolitan areas, and brings the average readership figure to 26 per cent.

Despite the lukewarm statistics, there is no alternative to newspaper as a media when it comes to building credibility for a new brand.

Phones, Smartphones and Computers
Nearly 80% of consumers use feature phones, with smartphones gaining rapidly at nearly 60 per cent. There is no doubt that smartphones will become increasingly popular, and thus crucial as a medium of consumer communication.

Computer or laptop ownership lags at 10 to 12 per cent. In most cases, the devices are purchased for university-going students, as reported by qualitative interviewers. The target segments for FR do not contain too many university-going individuals – since the age of the household heads suggest that their children's age might mostly range between 0 to 14 years.

Internet and Social Media
It is interesting to note that when asked specifically about 'access to media' (as opposed to 'ownership') the data returns 48% as Internet users, and 41% as social media users. The implication is that some consumers are using a family / common device to access these services.

Without exception, social media is used to mean two such platforms: Facebook and YouTube. YouTube based viewing of television drama, skits, and music is growing fast.

Apart from the above, outdoor visibility and community activation (e.g. door-to-door visits, road-shows, carnivals) will play a significant role in awareness building. The use of large billboards at key communication hubs (launch-ghat, train stations, airport) are expensive – but unparalleled in the visibility they provide.

It remains a practice in Bangladesh to utilize posters and banners for all products. Such below-the-line materials along with point-of-sales (POS) materials like danglers, buntings and shelf-talkers will reinforce brand recall.

Planners are also to consider strategic partnerships, consumer promotions, coupon redemption schemes,

5.7.5 Strategic Partnerships & Co-Creation

Certain (non-manufacturing) supply-side actors can help the brand gain positive feedback from the market. These actors may be thought of as 'marketing partners' and/or 'brand partners' actively engaged during any marketing effort.

- Supershop Distributor
- Grocery Delivery Company
- Advertiser of Commodity
- Advertiser of Rice
- Cooking Reality Show
- Lifestyle Magazine
- Shop-Sign Owner
- In-Store Ad Space Owner

The brand can create jointly branded content with any and all of the types of players mentioned above. This will help the FR brand reach out to partner brands' customer base at a fraction of the cost.

5.7.6 Cause Marketing

Upmarket, urban consumers are increasingly exposed to more ethical consumption choices, and more responsible modes of consumption. Thanks to international media, transboundary activism, and ethical micro-movements, concepts like social enterprise, ethical consumption, minimalism, and frugal living are seeping into urban households.

Just twenty years ago, the culture of corporate social responsibility (CSR) was viewed as extravagant, and more or less unnecessary. But in this present day and age, few brands can afford to not adopt one social cause or the other.

The fortified rice brand too must align itself with a greater, social cause in order to gain consumer confidence and admiration, and compete with more aggressive brands for consumer mindspace. Brand activism also represents an effective funnel for engaging with younger audiences, e.g. between the age bracket of 15 to 20 years. This youth segment – though admittedly not a commercial priority – will become household heads in the next five to ten years.

5.7.7 Building Brand Equity

In order to build brand equity through marketing efforts and promotions, the following are some principles to follow.

Presenting a Professional Front
A brand means very different things to the supply and demand sides. It is important to ensure that the consumer-facing brand puts up a professional front, e.g. through provision of home delivery service, product helpline or call center, and social media accounts that respond within 10 to 15 minutes.

Making Claims Tangible
Brand claims are built on product features and benefits. To make brand claims or benefit propositions tangible to the consumer, demonstrations of product performance are indispensable tools. As much as possible, brand promises and benefits should be demonstrated to target segments. Considering that community-level activations are usually very expensive, alternative tactics and avenues must be explored.

- ***Example**:* running, and leveraging as brand content, consumer blind-tests has worked for many brands. If the brand wants to claim that FR taste is exactly the same as that of normal rice (of the same variety) – then consumer representatives failing to distinguish one from the other is the strongest testimony to this effect.
- ***Example**:* utilizing locals for activations often brings down travel, logistics and accommodation costs. For example, BRAC (already involved with FR) has over 600 trained theater teams all across the country, comprised of experienced and dedicated volunteers. These teams could be deployed at a fraction of a cost of engaging Dhaka-based advertising agencies.

- ***Example**:* turning one instance of activation into a video product is another way of infinitely replicating an event without incurring additional costs.

Constant Tracking of Market & Competition
Gathering market and consumer data in usable form can be a costly affair – and thus remain beyond small and medium producers and marketers. In such cases, close tracking of stronger and larger competitors will result in valuable market signals, intelligence, and insights.

- ***Example**:* corporate marketers have developed premium or boutique brands that operate alongside, and possibly cannibalize, their flagship products. Yet, these companies, informed by privately commissioned studies, have ventured into specialty brands. This could be interpreted as a market signal that one or more luxury-seeking, premium-paying segments have appeared in the domestic market.

Investment in Industry Knowledge
Systematic gathering of consumer data and market trends can help brands adapt better to the ever-changing marketplace. A central knowledge hub or repository (free-access or members-only) will cater to producers and consumers alike, and create an air of transparency around the brand.

5.7.8 Timing Marketing Efforts

To reiterate a rule-of-thumb in commercial marketing: supply and availability of any product must come before demand is created. There should be no demand creation activities or displays in markets where supply has not been sorted out.

This timing is critical also when deciding on campaign media mix. For example, advertising on national media should begin only when reasonably wide distribution has been established. Otherwise what can happen is a media spillover.

In the medium term, fortified rice commercial marketing should start before the bio-fortified rice or another fortified rice brand enters the market. This will enable the FR brand(s) to attain first-mover advantage, which usually includes high consumer recall and high word-of-mouth (WOM) awareness.

As for timing week-to-week promotions, these should be designed to coincide with the 'monthly bazar' period. Most surveyed households tend to purchase rice and other food commodities towards the beginning of the month. In fact, qualitative responses show that families may opt to buy spare packs of 1 KG or 2 KG for the last days of a month – instead of replenishing stocks before time.

Therefore, time for rice-related promotions should reach their peak during the beginning of the month, and phase out from the second week.

CHAPTER 06

WAYFORWARD & CONCLUSION

This last chapter discusses translation of strategy into action. The first step towards operationalizing this strategy should begin with finalization of strategy and building consensus around any one of the three delivery-models developed at the beginning of chapter-5.

6.1 Operationalizing the Strategy

6.1.1 Formation of Functional Teams

Operationalization begins with formation of functional teams. That is to say, teams (or working-groups) must be specialized in their respective fields. It is not realistic to expect nutrition experts or fortification technicians to make marketing pitches, just as it is unrealistic to suppose that consumer behavior theorists can develop financial projections for regional markets. Regardless of which region or organization they are drawn from, teams of functional experts with compartmentalized but coordinated responsibilities signals a strong foundation for the days to come.

6.1.2 Developing Rules of the Game

To refresh memories, the first two delivery-models rely on the market muscle of corporate marketers. The third delivery-model is a franchise-like arrangement with a strong, external regulatory role.

The next step would be to define the scope, extent, duration, conditions, and rules of engagement and collaboration. This will lay down the extent of technical assistance to be provided, and specify contributions expected from producers.

6.1.3 Onboarding Producers & Marketers

Presently, several fortified rice producers are working closely with WFP, NI, GAIN, and the Government. However, it is likely that new supply-side actors will have to be identified and onboarded the retail marketing effort. For this reason, a business pitch will be needed, which will create interest among potential producers and marketers.

It is recommended that resources be allocated to the development of a pitch that encapsulates the potential of the target segments and the possibilities of the fortified rice sub-category. The pitch will show how a marketer can reap profits from filling an unserved / under-served consumer need.

The following lists elements of possible pitches to corporate marketers. A stripped-down version of the same may be used to create interest among small or medium sized rice millers, and result in transforming potential producers and marketers into champions of fortified rice.

Sample Contents of a Pitch to Producer-Marketers

The Government's Vision

- Stated policy of rice fortification to combat deficiencies
- Evidence of government funding of fortified rice initiative
- Future of fortified rice
- Advantages of early-movers in FR sub-category

Product Showcase

- Product overview & benefit propositions
- Brief history of development
- Immunity boosting properties
- Product images

Proof of Concept

- Urban trend towards premium varieties
- Consumer testing report
- Blind Consumer Test

Evidence of Latent Demand

- Consumer segment valuation
- Growth of premium rice brands
- Demand Forecast

6.1.4 Members-Only Resources

Members-only resources are those that can be accessed only when a particular corporation or enterprise formally agrees to participate in FR marketing. Examples of resources in this package include the following.

Business Model

- Cost-Benefit Analysis
- Business Case
- Learnings from the pilot marketing effort

Manufacturing Assistance

- Integration Into Production Line / Supply Chain
- Redesign of Operational Procedure
- Producer Staff Capacity Enhancement
- Alternative sourcing from SME millers
- Changes in production costs

Brand Portfolio Integration

- Quality Standards Certification

- Quality Guarantee Seal

Marketing Communication Pack
- Consumer segment heat map
- Consumer profile
- Key Message
- Brand strategy

Capacity-Building
- Microsite with self-service modules
- Training videos
- Managing oversight of quality assurance

Marketer Incentives
- Government recognition
- Recognition from development partners
- Possible 'Preferred Producer Status'
- Awards for contribution to public nutrition
- Media coverage and features

6.2 Concluding Notes

The study, consultations, and ensuing strategy sessions have revealed that considerable opportunity exists in the market for micronutrient fortified rice brands.

Urban, upwardly mobile segments are adopting changes to their lifestyle and changes to their brand preferences. Effects of this silent but certain shift is seen in the flurry of marketing activities undertaken by corporate marketers, which are also the most savvy in the consumers goods and packaged food categories.

It has been reconfirmed that consumer preference of rice breed is formed over the long term and should not be expected to change as a result of short-term marketing. The only viable option is to fortify rice varieties currently in demand. Consumers are not likely to shift from the open-market, to buying only branded-packaged rice – even though they may profess support for such a shift.

Combined with the finding that the Bangladeshi rice market is demand-driven – what becomes clear is the fact that it is the fortified rice marketer who must change.

The ideal FR marketer must be market-savvy, and capable of deploying resources, mechanisms and personnel to mine market signals and consumer intelligence.

Marketers of fortified rice, as crystallized throughout this report, must be capable of anticipating and leveraging demand trends, emergence of niche or specialized segments, and seasonal fluctuations etc. Because, the rice category itself is a volume-driven category (as opposed to a value-driven category).

The ideal FR marketer must be market-savvy.

Rice miller and producer interviews show how volatile and tightly-guarded the rice market remains. The ideal marketer must have market muscle.

All in all, it appears that in evaluating potential retail marketers for FR, more important than milling, blending or packaging capacity – is having an interconnected system of distribution pipelines, storage infrastructure, transportation contracts (e.g. with truckers), established commission rates and cash flows, and 'market muscle' including among other things a retail-level sales force capable of managing the individual ecosystems of the regional / local marketplace (haat-bazar).

Based on these findings, corporate marketers of rice (e.g. ACI, PRAN, Teer, Mozammel, Pushti etc.) emerge as the clear choice for producing micronutrient fortified rice.

Working with large corporations also means the opportunity to leverage existing brands, distribution networks, and market muscle. From a competitive point of view, the FR brand will not have to take on strong established brands in the marketplace.

Sole dependence on existing millers would entail the uphill battle against commercial brands with considerable consumer recall, behavioral data, retail strength, and advertising and promotional budget.

This exercise in reasoning demands consideration of an alternative production-marketing arrangement: a potential 'network of producers producing under a single, national brand'.

This brings the analysis to the question: are the producers of Puṣṭi Chāl capable of running localized marketing?

Naturally, this assessment does not apply equally to every single rice miller, but to a general class of market-actors in the rice category.

With that caveat, an indirect answer may be given: "they can be."

It is possible with reasonable levels of technical assistance for SME millers to carve out a niche and serve the local markets. However, they will likely be strained to obtain financing new marketing and sales functions, and continue to struggle to reach the kind of scale usually implied by the term 'retail marketing'.

The class of market actors possessing a combination of manufacturing and retailing skills and capabilities does not yet exist in the Bangladeshi market. If eventually, the fortified rice commercial marketing continues sole reliance on SME mills, then it is likely that all of them will struggle to gain any meaningful share of the most competitive and fiercely contested commodity market in the country.

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ANNEXURE

Annex 1: consumer segment details

Segment-1: Primary purchaser target segment [FR purchasers]

Core demographic segment:
Primarily married female of the age between 20 to 39 years, living in urban metro with up till SSC level educational qualification, and monthly household income ranging between BDT 20,000 to 48,000.

Segment general characteristics:

1. Represents 9% of survey population
2. Her household income level is generally 20 to 48K per month, however, there is another segment having over 60K per month income
3. Her head of the household is generally small businessmen or low to mid-level employee
4. She lives in rented house with 4 to 5 members; all of them eat rice
5. She uses supply gas stove for cooking (no gas cylinder)
6. She does not receive any government financial or food benefit
7. She and her family consume rice during lunch and dinner; however sometimes during breakfast as well
8. She prepares rice twice daily in the household
9. Her household monthly rice consumption is primary between 25 to 44 KG, especially around 40 KG in pack
10. BRRI 29 and Miniket are the main consumed rice types for her family
11. She herself cooks rice and spends more than 2 hours per day in kitchen
12. Taste of rice is the primary decision criteria to choose rice in her household, significantly followed by faster cooking time and cost savings
13. She also keeps track of the rice inventory at home
14. She primarily consults with her husband for rice purchase decision
15. She physically visits the shop and purchases rice once for the whole month (does it during masher bazar) and generally remains closely involved in selecting the variety and brand of the rice.
16. ACI, PRAN, Fresh, Chashi, and Teer are the top 5 known rice brands to her
17. She generally purchases locally packaged unbranded rice, however, she also purchased branded rice in some cases as well
18. Chashi and Teer are the brands that she has primarily tried so far, however does not have any negative feeling toward any brand
19. She prefers to stick with one tested brand, Once chosen she sticks with the type for more than 2 years. She has not tasted any new category rice for over a year (Difficult to try out new variant, however will stick with it if found favorable; so getting them to try out FR should be the main focus of any campaign)
20. She primarily goes to grocery stores and wholesalers to buy rice, if that is not available, then she visits local corner shops and specialized rice stores to purchase rice as well (assumption: for small and trivial quantities only)
21. Look and feel (clean, white, dry, and shiny) of the rice is the primary factor in her purchasing decision; price is the secondary deciding factor
22. She walks in the store with predetermined idea of her preferred rice and spends less than 10 minutes to buy rice
23. Any day in the week is a good day for her to buy rice (no day preference)
24. She buys household ingredients (primarily pulse, edible oil, sugar, salt, spice etc.) whole purchasing rice as well (Masher bazar items that can be tagged with FR purchase)

25. She generally asks for generic rice items; however, quite sometimes she asks for specific brand of rice as well; she does not ask for any recommendation from the seller (there is a scope of seller based unsolicited recommendation, especially to those who asks for generic rice item)
26. Husband and Children's preference is a primary factor to choose rice for purchase
27. She became self-motivated to purchase fortified rice after seeing a promotional communication; no seller induced her to purchase FR
28. Apart from rice, she also tried out fortified soyabean oil, iodized salt, and atta (possibility to package/ tag FR with these items and/or these companies)
29. She and her family are highly satisfied with fortified rice (Its extremely important for new users to try out FR, once done they are more likely to stick with it: so onboarding / new sales drive is much more effective than any loyalty drive or generic communication)
30. COVID situation has increased the rice consumption of her household by 10 to 20%
31. She pays in cash after rice purchase
32. She looks for ways to improve her family's health, nutrition, and well-being (promotion campaign to condition FR with family wellbeing that will make their children and husband happy and healthy)
33. On time, freshly cooked, and healthy food on the table is a major priority in her life
34. She believes that fortified food has better nutritional value with added micronutrients (comment: even though she does not understand the term 'micronutrient', so need to use easier to understand term)
35. Apart from FR, they have heard and bought fortified oil, flour, and salt (comment: Its extremely important to be able to communicate with them in an understandable format, they are more likely to try it then)
36. She seems to discuss and introduce more green vegetables to consume in her family diet; however, she takes more personal initiatives to increase positive food practices without consulting anyone (comment: she is likely to ty out FR by herself, without consulting anyone, if she is communicated of the good impacts it will have on her family's health; given that the rice looks good and within price range)
37. The promotional message for FR should primarily contain health benefits; some case studies will help to generate the trust
38. She is less likely to try out FR if the taste and smell as well as look and feel are different than her currently consumed item (Primarily BRRI 29 and Miniket)
39. She is ok to pay extra between 2 to 6 taka per kg of FR for the sake of her family's wellbeing
40. She is ok to spend additional Tk 80 to 240 per month to purchase FR
41. She does not have any idea of what sort of micronutrients are added in FR (Educating her of the benefits of the micronutrients will impact her purchasing decision)
42. She has TV at her home and watches local cable TV; rarely listens to radio; she also does not subscribe to any newspaper
43. She owns both feature phones and smartphones generally with internet; however, she generally does not own a computer at home
44. She generally has social media profile (i.e., Facebook)
45. News and Natok are the two types of program she absolutely watches in TV
46. 8-10 am, 11 am to 2 pm, 3 to 4 pm, 5 to 6 pm are the primary slots they watch TV
47. She uses her mobile phone to call, send SMS, and take photos; sometimes use it for playing video and app-based messaging as well

48. She generally accesses internet between 9 to 30 times per week
49. Facebook is the primary use of internet for her; she also uploads photos, reads news, and streams video with internet (FB based promotion might come in very handy)
50. She prefers physical purchase in general life
51. She primarily uses bKash whenever she transacts digitally; also prefers to take it up more as non-cash transaction method
52. She trusts information from TV when making food related decisions (news reports on FR can be very effective in generating trust)

Segment-2: Primary purchaser target segment [fortified food commodity purchasers]

Core demographic segment:
Primarily married female of the age between 20 to 39 living in urban metro with up till HSC level educational qualification with BDT 32K and above monthly household income

Segment general characteristics:
1. Represents 44% of survey population (not unique)
2. Her head of the household is generally small business owner or low to mid-level employee
3. She lives in rented house with 4 to 5 members; all of them eat rice
4. She uses supply gas stove for cooking (no gas cylinder)
5. She does not receive any government financial or food benefit
6. She and her family consume rice during lunch and dinner; however sometimes during breakfast as well
7. She prepares rice twice daily in the household
8. Her household monthly rice consumption is primary between 25 to 59 KG, especially around 39 KG in pack
9. Miniket, Polao, and BRRI 29 are the main consumed rice types for her family
10. She herself cooks rice and spends more than 2 hours per day in kitchen
11. Taste of rice is the primary decision criteria to choose rice in her household
12. Both the husband and wife are involved in keeping track of the rice inventory at home
13. She primarily consults with her husband for rice purchase decision
14. She physically visits the shop and purchases rice once for the whole month (Comment from Mubir: does it during masher bajar) and generally remains somewhat to closely involved in selecting the variety and brand of the rice.
15. She generally does not specify which type of rice she needs while making the purchase request
16. Monthly general household expense on rice is 2201 Tk (needs clarification)
17. PRAN, Chashi, ACI, Fresh, and Teer are the top 5 known rice brands to her
18. She generally purchases locally packaged unbranded as well as loose rice from open market,
19. Chashi and PRAN are the brands that she has primarily tried so far, however there are other people in the same segment have not tried out any branded rice so far.
20. She does not have any negative feeling toward any brand
21. She prefers to stick with one tested brand, Once chosen she sticks with the type for more than 2 years. She has not tasted any new category rice for over a year (Comment from Mubir: Difficult to try out new variant, however will stick with it if found favourable; so getting them to try out FR should be the main focus of any campaign)

22. primarily She and additionally her husband go to local, bazaar, grocery stores, rice only stores, and corner shops to buy rice
23. Look and feel (clean, white, dry, and shiny) of the rice is the primary factor in her purchasing decision; aroma/ fragrance is the secondary deciding factor
24. She walks in the store with predetermined idea of her preferred rice and spends less than 10 minutes to buy rice; however, in some cases she spends more than 20 minutes
25. Any day in the week is a good day for her to buy rice (no day preference)
26. She buys household ingredients (primarily pulse, edible oil, sugar, salt, spice etc) whole purchasing rice as well (comment from Mubir: Masher bajar items that can be tagged with FR purchase)
27. She generally asks for generic rice items; however, quite sometimes she asks for specific brand of rice along with quantity as well; she does not ask for any recommendation from the seller (comment from Mubir: there is a scope of seller based unsolicited recommendation, especially to those who asks for generic rice item)
28. For her rice has to meet visual look and feel criteria as well as meet the budget
29. She generally is not aware of FR, however, some purchasers of the same segment have seen the promotion
30. Generally, no one has proactively mentioned her about FR at the time of rice purchase
31. Fortified soybean oil and iodized salt are primary fortified products she has tried so far (comment from Mubir: possibility to package/ tag FR with these items and/or these companies)
32. She and her family are highly satisfied with fortified rice (comment from Mubir: Its extremely important for new users to try out FR, once done they are more likely to stick with it… so onboarding / new sales drive is much more effective than any loyalty drive or generic communication)
33. COVID situation has increased the rice consumption of her household by 10 to 20%
34. She pays in cash after rice purchase
35. She looks for ways to improve her family's health, nutrition, and well-being (comment: promotion campaign to condition FR with family wellbeing that will make their children and husband happy and healthy)
36. On time, freshly cooked, and healthy food on the table is a major priority in her life
37. Apart from FR, they have heard and bought fortified egg, fruit, milk powder, and vegetables (comment: It seems that they try out almost all the fortified items after hearing about it. So, it's extremely important to communicate with them in an understandable format, they are more likely to try it then)
38. She seems to take more personal initiatives to introduce healthier food practices (e.g. increase consumption of local fruit, green vegetables to consume in family diet, introduced healthier oil, and reduced fizzy drinks intake) for the family (comment: she is likely to try out FR by herself, without consulting anyone, if she is communicated of the good impacts it will have on her family's health; given that the rice looks good and within price range)
39. She is more likely to probe for further information upon hearing about a FR that might help improve her family's wellbeing
40. She has like to hear about FR in mass media before; however, many in the same segment have not heard about it yet
41. The promotional message for FR should primarily contain health benefits; some case studies will help to generate the trust
42. She is less likely to try out FR if the grains display inconsistent color and texture.

43. She is ok to pay extra up to BDT 2 per kg of FR for the sake of her family's wellbeing; She is ok to spend up to BDT 80 additionally per month to purchase FR
44. She believes that fortified food has better nutritional value with added food value / micronutrients (comment: even though she does not understand the term 'micronutrient', so need to use easier to understand term)
45. She does not have any idea of what sort of micronutrients are added in FR (comment: Educating her of the benefits of the micronutrients will impact her purchasing decision)
46. She has TV at her home and watches local cable TV; does not listen to radio or generally read newspapers or magazines
47. She generally owns a feature phone and less likely to use internet; however, some people of same segment own smartphones with lesser access to internet; she does not own a computer at home
48. News and Natok are the two types of program she absolutely watches in TV; sometimes she watches reality shows as well
49. 8-10 am, 11 am to 2 pm, 3 to 4 pm, 5 to 6 pm are the primary slots they watch TV
50. If she listens to radio, she listens to news.
51. She uses her mobile phone to call, send SMS, and take photos; sometimes use it for playing video and app-based messaging as well
52. She generally accesses internet between 9 to 20 times per week
53. If she has access to internet, she generally has social media profile (i.e., Facebook)
54. Facebook is the primary use of internet for her; she also uploads photos, streams videos, and reads news with internet (Comment: FB based promotion might come in very handy)
55. She prefers physical purchase over online purchase in general life
56. She primarily uses Bkash whenever she transacts digitally; also prefers to take it up more as non-cash transaction method
57. She generally does not trust any media information to make food related decision; however, other people of the same segment trusts information from TV in the same matter (Comment: news reports on FR can be very effective in generating trust)
58. Husband and Children's preference is a primary factor to choose rice for purchase
59. She became self-motivated to purchase fortified rice after seeing a promotional communication; no seller induced her to purchase FR

Comparison: general rice purchaser versus potential fortified rice purchaser

Compared to generic rice consumers, fortified rice consumers consume less rice primarily because lesser members consume rice in their household; even though they share the same demographic and economic characteristics
Apparently fortified rice consumers consume less of polao rice
Apart from the taste of rice, general rice consumers easiness to cook as the main preference to choose rice, whereas fortified rice consumers look for faster cooking time and cost saving factors
ACI, Pran, Chashi, and Teer are top brands a generic rice customer has observed; in addition to that fortified rice consumers have seen Fresh brand.
Generic rice consumers generally purchase loose rice from open market; also purchase locally packaged unbranded rice; whereas fortified rice consumers

purchase locally packaged unbranded rice along with branded rice in some cases.
Even though very low PRAN and Chashi are the mostly tried brands of general rice purchasers; whereas Chashi and Teer are the mostly tried brands of fortified rice purchasers
Local bazar, rice only shop and corner shop are the primary rice purchasing points for a generic rice purchaser; whereas fortified rice customers visit grocery stores and wholesalers to purchase rice.
Most generic rice customers spend more than 20 minutes in the rice shop; whereas fortified rice customers spend less than 10 minutes
Generic rice customers look for specific breed of rice of specific amount; whereas fortified rice purchasers are generally less specific about it.
Spouse is the main influencer in rice purchasing decisions for a generic rice customer; whereas for fortified rice customers the majority influencers consist of spouse and children
Most of the generic rice purchasers have not even heard about fortified rice
Most of the generic rice customers have not tried any fortified food item so far; however, some have tried iodized salt and fortified atta; however, apart from trying fortified rice, most of this type of buyers have tried out fortified soyabean oil, iodized salt, and atta.
General rice consumers have not heard of Puṣṭi Chāl before
Generic rice customers are willing to pay up to BDT 2 extra per KG of rice purchased, whereas fortified rice purchasers are willing to pay up to BDT 6 per KG of rice
General rice customers are willing to spend up to BDT 80 extra per month; whereas FR customers are willing spend up to BDT 240 per month for purchasing FR rice
Most of the generic rice customers are aware of the name of any micronutrient, nor understands the term
Contrary to FR customers, generic rice customers use more feature phones than smartphones let alone using Internet
7-8 pm, 9-10 pm, and 11-12 pm are the time slots that generic customers watch TV; on the contrary FR customers' primary slot to watch TV are 8-10 am, 11 am to 2 pm, 3 to 4 pm, and 5 to 6 pm

Annex 2: Interviewee List

List of interviewees	
Interviewee	Mode of interview
Dhaka region- Blending millers (4)	
M/S Munshiganj Fibre and Agro Industries Ltd, Hatlaxmigonj, Munshigonj	Telephonic interview
M/S Bhawal Auto Rice Mill, Shimoltoli, Kaliakair, Gazipur	Telephonic interview
M/S Astha Feed Mill and Agro Complex, Narshingdi	Telephonic interview
M/S Shohagh Auto Rice Mill, Rajoir, Madaripur	Telephonic interview
Sirajganj region- Blending millers (3)	
M/S R S Color Sorter Auto Rice Mill unit 1 and 2	Face to face interview
Al-hera Auto Rice Mill (Naogaon)	Face to face interview
Rashni Rice Mill (Sylhet)	Telephonic interview
Unfortified rice millers- Dhaka region (4)	
M/S Munshiganj Fibre and Agro Industries Ltd, Hatlaxmigonj, Munshigonj	Telephonic interview
M/S Bhawal Auto Rice Mill, Shimoltoli, Kaliakair, Gazipur	Telephonic interview
M/S Astha Feed Mill and Agro Complex – Narshingdi	Telephonic interview
M/S Shohagh Auto Rice Mill, Rajoir, Madaripur	Telephonic interview
Unfortified rice millers- Sirajganj region (6)	
M/S R S Color Sorter Auto Rice Mill unit 1 and 2	Face to face interview
Al-hera Auto Rice Mill (Naogaon)	Face to face interview
Rashni Rice Mill (Sylhet)	Telephonic interview
Jobayda semi-auto rice mills	Face to face interview
Sarker semi-auto rice mills	Face to face interview
Jahangir auto rice mills	Face to face interview
Kernel producing millers (3)	
Al-hera Auto Rice Mill (Naogaon)	Face to face interview
Rashni Rice Mill, Sylhet	Telephonic interview
NK Foods; Vatipar, Dewanganj, Jamalpur	Telephonic interview
Machinery supplier (2)	
Sony engineering, Khulna	Telephonic interview

Osman engineering, Naogaon	Face to face interview
Supermarkets, Modern Trade and branded rice manufacturing company (3)	
ACI- Swapno	Face to face interview
Chaldal online shop	Telephonic interview
ACI-rice unit	Telephonic interview
Government official (1)	
Deputy Secretary, Ministry of Food	Online interview
FRK testing facility (1)	
NFSL, Dhaka	Face to face interview
Local government officials (2)	
DC- Food, Sirajganj	Face to face interview
Deputy Director, Department of Women Affairs, Sirajganj	Face to face interview
District controller- Food; Sirajganj	Face to face interview
Other stakeholders (5)	
GAIN Bangladesh representative (2)	Online interview
Nutrition International representative (2)	Online interview
WFP representative	Online interview

Annex 3: Sampling Design & Quality Control

Quality control

To ensure quality, Innovision maintains rigorous quality control measures at each level of the data collection process. The ultimate output is to maintain high quality if measures are taken right from design to writing reports through the preparation of tools, training of survey staff, administration of the survey, close guidance and supervision at all stages, and in-depth data analysis. High emphasis of quality data input and high- quality analysis and presentation was ensured.

Innovision pays attention to the quality of questionnaire (schedule), quality of field staff (qualification and experience of the field staff), selection procedures for the field staff, training of field staff, re-interview, editing of filled in questionnaire at field level and actions followed, and provision for reward/penalty for doing excellent/poor work. The quality control mechanisms are briefly described in the following:

Data Quality Control: Data collection quality was ensured through stringent quality control mechanism through multiple steps as follows:

- *Stringent Training Procedure:* Innovision provided the in-house staff with three days long training, which included field training and pre-testing. The training focused on the background of the project, objectives of the study, purpose, and details and explanation of each question and their implications. The training methods were practice oriented and followed by field exercise. Rigorous training was provided in both classroom and field conditions. The detailed training schedule is attached as Annex-2.
- *Supervision and Monitoring:* Innovision maintained the quality of collected data by dividing the enumerators into data collection teams during fieldwork. Each team was assigned a team leader, who has significant experience in the field. Close contact with WFP was maintained regularly to help them keep up to date with the progress in the field. In addition, data quality tables was also maintained at the head office every week to identify systematic error, and measures were taken to ensure that these problems do not persist.
- *Guidelines and Instruction for the Field Staff:* Comprehensive guideline or instruction was prepared in Bangla for ease of perfect data collection by the field investigators and it served as guide at the field to remove any ambiguity and misunderstanding.
- *Data Acquisition, Cleaning, Processing and Analysis:* Data acquire, cleaning was conducted in-house to ensure security and better control. Data entry and editing was started within two weeks after beginning of the data collection. All data was entered twice, to ensure 100% accuracy with discrepancies resolved through referral to the original questionnaire. All collected data is stored safely, backed up, and kept confidential.

Annex 4: Field Safety Guidelines

Innovision Consulting Private Limited

Training by Field Manager:
Field managers will use online platforms to conduct training as much as possible (for small training, up to 20 enumerators). No training will take place in office premises until further notice.
For a large sample study, in-person training is necessary.
We will hire a training venue with the capacity of 70 people, where we will train 35 enumerators by maintaining social distancing on a given day.
Nobody should not touch their masks during training, transportation, staying in the field, face-to-face interviews etc. If they need to do so, they should sanitize their hands before.
For conducting face-to-face surveys, we shall provide all enumerators with masks, eye-protective glasses, PPE, hand sanitizer and hand gloves.
Product collection from head office:
When collecting the protective equipment or any product related to the survey from office, enumerators and supervisors must follow the following guidelines:

- The field manager will give enumerators and supervisors specific time periods to collect their equipment.
- At a given time, a group of 4 field operatives may be called at the office premises.
- Initially they are to assemble at the ground floor under the open skies maintaining 3 feet gap from each other
- The Field Manager will wait at the admin floor.
- He will call one person at a time to come upstairs to the admin floor and will hand out the goods to the field operatives.
- Once the products have been distributed, they must immediately leave the office premises and will not be allowed to assemble downstairs by the on-duty security guard.
- The next group of field operatives will be scheduled to come one hour after the first group and this will continue until the final products have been distributed.
- Failure to maintain these rules by any field operative will cause their immediate dismissal from the project.

Transportation protocol

- Enumerators and supervisors will wear protective items (masks, face masks, gloves) while using any public transport at all times.
- They will carry hand sanitizers and use that frequently.
- They should not touch their masks during travel. If emergency, should sanitize hands first.
- They will keep extra protective items so that things can be replaced whenever required.
- No team members should buy any food during transportation. They can take their home-made food with them to a long transportation.
- They will report the situation or any adversities every four hours to the field manager during travelling.

Staying in the field

- The enumerators and supervisors should use separate rooms for staying
- The portfolio manager and associates should budget appropriately to cover additional expenses.

Guideline for conducting face-to-face interview for supervisors and enumerators:

- When taking face-to-face interviews, social distancing (at least 3 feet gap) will be maintained between interviewer and respondent;
- It will be mandatory for the interviewers to wear a mask, protective overall,, gloves while conducting any face-to-face interview. No touching the face masks.
- The field operative will also ensure that each respondent is also wearing a mask during the interviews. If any respondent refuses to wear a mask during the interview, then that interview has to be terminated immediately. If respondent runs out of mask, then a mask may be provided by interviewer;
- Field operatives should opt for conducting all interviews under open skies whenever possible;
- In cases where interviews have to conducted indoors, interviewers must ensure that there are no more than 4 persons gathering within a closed space where the interview is to be conducted; if this cannot be maintained, then terminate sample immediately;

Guideline for Innovision Field Managers:

- A field manager's body temperature must be measured and has to be within normal range before one can be admitted inside office premises
- Field manager must wear mask inside office at all times
- Two field managers may not hold any product collection event at the office premises at the same time on the same day;
- To avoid this from happening field managers will communicate with each other and align their activities on separate days;

Guideline for Portfolio Managers:

- Portfolio managers will align with field managers remotely whenever possible
- In case portfolio managers need to visit office then their body temperature will be measured and will only be admitted if reading is within normal range;

Eating and Smoking:

- There will be **no food** in the lunchroom, no tea/coffee will be served. Everyone will use a personal mug/glass to have water and wash those personally. People attending the office can bring snacks/fruits and will take lunch after going back home.
- If you want to have tea/coffee, bring boiling water in a flask, tea bag/instant coffee bags and use those in your own cup/mug. After consumption, clean your mug properly and keep at your desk.
- If you are a smoker, use the designated place for smoking. Do not smoke together.

Annex 5: Enumerator training for the consumer survey

A three-day enumerator training was arranged at the ICPL office from 12.12.2020 to 14.12.2020. The study team conducted the training. A representative from WFP was present in first two days of the training session. The training days were divided into three sessions. The schedule of the training sessions is presented below:

Table: Training schedule

Session	Time
First session	9 AM to 11 AM
Snacks break	11 AM to 11:30 AM
Second session	11:30 AM to 1 PM
Lunch break	1 PM to 2 PM
Third session	2 PM to 3:30 PM
Tea break	3:30 PM to 4 PM
Fourth session	4 PM to 5 PM

The enumerator training included:

- Debriefing on the objectives of the study, quality control mechanisms, and overall conduct of the project.
- Ethical principles of human subject research.
- Detailed explanation of each question, so that enumerators can interpret all questions consistently, and ask all questions in the prescribed manner with informed explanations to help respondents in case of any confusion.
- Instruction on how to properly fill out the data entry lay-out (convention for numeric variables, importance of legal values, how to differentiate and punch replies such as not applicable, refused to respond, don't know, and so on).
- Techniques to secure participation, interviewing techniques, how to handle difficult situations and common occurrences, probing, etc.
- Mock interviews to test the enumerators.
- Logistics and schedules.

The details of the training sessions is presented below:

- **Day-1:** A brief of the assignment was presented to the trainees in the first session of the interview. The objectives of the assignment and expectations from the consumer survey was communicated in details with the trainees. Process of rice fortification, current status of rice fortification in Bangladesh and advantages of consuming fortified rice was communicated with the enumerator team. Manners and etiquettes of conducting face to face interviews, do’s and don’ts, description of behavioural conduct before, during and after the interview with tips on how to handle difficult situations, etc. were discussed in details in the first day of the training. In addition, the interview protocol during the ongoing COVID-19 crisis was communicated with the enumerators. The protocol is attached as Annex-1. Detailed questionnaire training was provided in the other three sessions of the day that included explanation of and instruction on each question.
- **Day-2:** A brief refreshing session on the questionnaire was conducted in the first session of the day. Questionnaire training was completed during the second session. The other two sessions included a feedback session and a mock interview session. During the feedback session, the study team received feedback from the trainees on language of the question, explored hypothetical scenarios where the existing questionnaire might cause

hesitation between the interviewees and the interviewers. After receiving feedback, the questionnaire was adjusted by making little changes to ease the language of the questions, adding or changing some options of some questions etc. During the mock interview session, the enumerators were asked to divide in groups of two to conduct a mock interview. After completion of the first round, the interviewer became the interviewee and the interviewee became the interviewer for the second round of mock interview. After the completion of the mock interviews, the second day training was concluded.

- **Day-3:** In the third day of training, the enumerators were asked to conduct a pre-testing of the questionnaire. The pre-testing was conducted in the adjacent neighbourhoods of ICPL office (Baridhara area) with the residents. The trainees were divided in three teams under supervision of three field supervisors. Each of the trainee conducted one interview. After the pre-testing session, the enumerators were back at the office for a round of experience sharing session. Based on the experiences of the pre-testing, some little adjustments were made in the questionnaire and the queries of the enumerators were catered. In the last session of the day, the enumerators were asked to conduct another session of mock interview with the fellow trainees using the revised questionnaire. The trainees were evaluated based on the following criteria during this session:
    - Delivery of the questions
    - Extent of knowledge on the subject-matter
    - Level of comfort he/she is able to create during the interview
    - Enthusiasm
    - Understanding of the questions
    - Extent to which he/she is able to clearly communicate the queries
    - Timeliness

Based on the evaluation, a total of 12 enumerators were selected from a group of 15 trainees. Later, the enumerators were divided into three groups. Each group was led by a field supervisor designated for a specific area. Following is the details of the enumerator teams that were deployed for data collection:

Table: Data collection team and assigned areas

Team	Area	Number of enumerators	Name of the supervisor
Team-1	Dhaka metropolitan – South and Keraniganj and Nowabganj upazilas from southern Dhaka	5	Minu Begum
Team-2	Dhaka metropolitan – North and Dhamrai and Savar upazilas from northern Dhaka	4	Mostafa Tarafdar
Team-3	Sirajganj district	3	Imon Kumar Saha