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VALUE CHAINS FOR NUTRITION IN SOUTH ASIA: WHO DELIVERS, HOW, AND TO WHOM?

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Business-Based Strategies for Improved Nutrition: The Case of Grameen Danone Foods*

Jessica Agnew and Spencer Henson¹

Abstract There is increasing interest in the role that businesses can play in promoting the consumption of nutrient-dense foods as part of strategies to reduce the prevalence of micronutrient deficiencies in developing countries. To date, however, there has been little in-depth analysis of the extent to which viable business opportunities exist for nutrient-dense foods in the context of markets catering to communities. Furthermore, whether businesses can deliver sustainable improvements in the nutrition of poor populations at scale is not yet evident. This article examines the case of Grameen Danone Foods Ltd, a social enterprise that specifically aims to bring about improvements in the micronutrient status of poor children in Bangladesh through the sale of fortified yogurt. The article examines the degree to which this business has been successful at establishing a viable market for fortified yogurt amongst poor communities, and the challenges it has faced in trying to achieve this.

Keywords: nutrition, micronutrient deficiency, markets, business, Bangladesh, food-based approaches.

1 Introduction

Globally, there are an estimated 2 billion people with micronutrient deficiencies (FAO 2013). The most severe deficiencies are evidenced by clinical markers; for example, night blindness in the case of vitamin A deficiency. Furthermore, sub-clinical deficiencies can retard child growth and development resulting in severe health issues, such as the stunting of children. This 'hidden hunger' not only contributes to 1.1 million child deaths annually (Black *et al.* 2013), but also imposes economic constraints on low- and middle-income countries due to low educational attainment, reduced productivity, and constrained income-earning capacity (Bailey, West and Black 2015). Accordingly, addressing the persistent and severe level of micronutrient deficiencies is of critical public health importance at a global level, and particularly in sub-Saharan Africa and South Asia.

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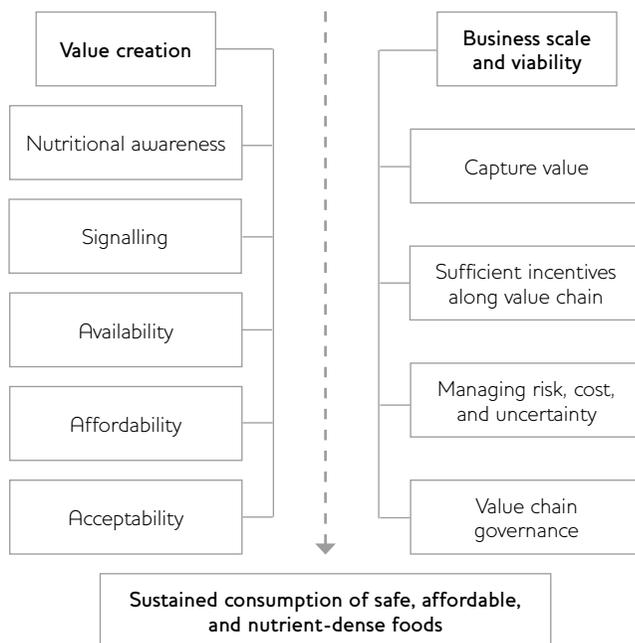
There is considerable evidence that a poor diet is the primary cause of nutritional deficiencies, resulting from insufficient intakes and poor absorption of micronutrients (von Grebmer *et al.* 2014). Thus, food-based strategies, including the fortification of widely consumed processed foods and the enhancement of the micronutrient content of commonly consumed staples through biofortification, have been promoted as a viable approach to enhancing the micronutrient status of populations (Gibson 2011). However, whilst a number of nutritionally enhanced foods have been found to be efficacious in reducing micronutrient deficiencies, there are considerable challenges in achieving sustained consumption of these foods by poor communities (Henson and Humphrey 2015; Humphrey and Robinson 2015).

Food-based interventions are typically implemented and/or funded by governments, bilateral or multilateral donors, or non-governmental organisations (NGOs). Such initiatives, however, tend to be focused on specific population groups, targeted according to their socioeconomic status, situation, and/or geographical location. It is increasingly recognised that actions by the public and/or civil society sectors can rarely achieve scale and sustainability at the level of populations (Gillespie *et al.* 2013). Recognising that the majority of poor communities procure some or all of their food through markets, there is increasing attention to the role of businesses in bringing about the increased consumption of nutrient-dense foods by deficient populations (Humphrey and Robinson 2015).

There are increasing examples of efforts by businesses to market nutrient-dense foods to poor populations, from multinational corporations (MNCs) to micro and small enterprises (MSEs) operating across the formal and informal sectors of sub-Saharan Africa and South Asia (Humphrey and Robinson 2015). Various types of businesses are selling complementary foods for infants, ready-to-use therapeutic foods (RUTFs), fortified processed foods, and biofortified staples.² There are many questions, however, about the sustainability of these businesses and under what circumstances, and the extent to which they are able to bring about improvements in the nutrient intake of poor populations at scale. The fact that many of these questions remain unanswered reflects the paucity of in-depth studies of businesses engaged in markets for nutrient-dense foods directed at poor populations.

This article begins to address this research gap by reporting the results of an in-depth case study of Grameen Danone Foods Ltd (GDFL). A social enterprise established as a joint venture between Groupe Danone and Grameen Enterprises, GDFL manufactures and distributes a fortified yogurt called Shokti+ to poor consumers, predominantly in rural areas of Bangladesh. When GDFL first started marketing Shokti+, consumers were not familiar with the product offering, particularly the concept of 'fortified'. This particular case, therefore, has the potential to provide valuable insights into the challenges that businesses face in marketing nutrient-dense foods to poor populations, and valuable lessons as to the effectiveness of the strategies that such businesses employ.

Figure 1 Business model requirements for achieving sustained consumption of nutrient-dense foods by poor populations



Source Authors' own, adapted from Henson and Humphrey (2015).

The remainder of the article is structured as follows. First, a conceptual framework is presented that aims to disaggregate the various factors that determine the extent to which businesses can achieve both nutrition impact amongst poor communities and commercial sustainability. The methods of the study are then described. Subsequently, the value chain of GDFL is mapped and analysed using key elements of the conceptual framework. Finally, key insights and conclusions regarding the role of businesses in promoting the increased consumption of nutrient-dense foods by poor populations are presented.

2 Conceptual framework

In considering the role of businesses in enhancing consumption of nutrient-dense foods by poor populations as part of broad-based initiatives directed at reducing micronutrient deficiencies, it is critical to examine both the demand side and supply side of the market. With respect to demand, poor consumers must be able and willing to pay a price that is sufficient to provide a sufficient economic return to businesses. In turn, this requires that consumers recognise the nutritional value of the food in question and weigh this appropriately against other characteristics of the food including taste, quality, brand name, convenience, etc. (Humphrey and Robinson 2015; Koh, Hegde and Karamchandani 2014). On the supply side, the food needs to be produced, processed, and distributed in such a way that it is nutrient-dense and safe at the point of consumption, and also easily available to poor consumers. The costs of achieving this must be kept under

control so as to be able to charge a price that ensures the business is commercially viable in the medium to long term whilst not being prohibitive to the consumer (Henson and Humphrey 2015).

Henson and Humphrey (2015) outline a conceptual framework that delineates these demand- and supply-side requirements for viable business models for nutrient-dense foods directed at poor populations and that bring about sustained consumption of safe nutrient-dense food (Figure 1). On the one hand, businesses must create sufficient value in the eyes of the consumer so as to motivate purchase consumption. Thus, communication efforts must ensure that consumers are aware of the health benefits of consuming more nutrient-dense foods; the positive effect of nutrition education on improved consumption of nutrient-dense foods has been well established (see, for example, Hotz and Gibson 2005; Ickes *et al.* 2017; Smitasiri, Attig and Dhanamitta 1992). Furthermore, businesses must signal in a clear and reliable manner that the foods they are selling have nutritional attributes that are superior to less nutritious alternatives. This can be challenging given that the micronutrient content of food is a credence characteristic and unverifiable even post-consumption (Nwuneli *et al.* 2014). There is a key role of indirect indicators of the nutritional value of the food here including labels, branding, etc. which has been shown to influence consumer choice even in the context of credence attributes (Verbeke 2008). Finally, all of this needs to be achieved in a manner that ensures nutrient-dense foods are affordable, available, and more generally acceptable to poor populations.

On the other hand, businesses must operate in a manner that allows them to capture a sufficient proportion of the value they create for consumers so as to cover their costs and earn a commercial return. Businesses, furthermore, must ensure that there are sufficient incentives for actors along the value chain to undertake the functions necessary for the production and distribution of nutrient-dense foods that are safe, and that are available, affordable, and acceptable to poor populations. The structure and *modus operandi* of the value chain plays a critical role here; for example, in ensuring the accurate and timely transmission of information between actors and in the coordination of their respective functions. Given that markets directed at poor populations are characterised by significant risks, and that there is a continuous need to drive down costs in order to achieve prices that poor populations are able and willing to pay, achieving these conditions can be very challenging for businesses.

Credence is given to this conceptual framework by the findings of the limited existing literature on businesses engaged in markets for nutrient-dense foods directed at poor populations. For example, Kayser, Klarsfeld and Brossard (2014) provide evidence of the ability to market food products with claimed health benefits to poor communities in South Asia and sub-Saharan Africa. However, the viability of such businesses requires innovative ways in which to create value and manage costs in order for poor populations to be able and willing to purchase such products. Furthermore, a wider body of studies examines

the ‘willingness to pay’ of poor populations for nutrient-dense foods; for example, biofortified staples (see, for example, Chowdhury *et al.* 2011; DeGroot, Kimenju and Morawetz 2011; DeSteur *et al.* 2012) that highlight the importance of consumer awareness and appreciation of the nutrition and health benefits such products are claimed to deliver in generating value in the eyes of the buyer.

3 Methods

The study reported here has two primary research questions. First, to explore the challenges faced by GDFL in marketing nutrient-dense foods to poor communities whilst establishing longer-term commercial viability and achieving scale. Second, to provide preliminary evidence of the extent to which GDFL was successful in bringing about improvements in the nutrition of poor populations. To address these research questions, two stages of data collection and analysis were undertaken.

First, preliminary data were collected through a desk review of existing studies of GDFL. Subsequently, in-depth interviews were undertaken with members of the managerial team at GDFL (n=9) and with actors along the GDFL value chain including retailers (n=11), door-to-door sales team (n=3), and producers (n=2). A standard interview schedule was employed for the interviews. The interviews were audio recorded and detailed notes were kept for analysis.

Subsequently, a survey of households in rural communities and children in urban schools in which GDFL marketed its fortified yogurt was undertaken. The survey collected data on awareness, and purchase and consumption behaviour of households and children with respect to the yogurt. Also, data were collected on the nutritional adequacy of the diet of children in these communities and schools, using diet diversity scores (DDS) as a proxy indicator. The aim in so doing was twofold: (1) to explore the ‘willingness to pay’ of poor populations for Shokti+ consumed in these communities and schools; and (2) to determine the characteristics of households and children that did or did not purchase the yogurt, especially with respect to the nutritional adequacy of their diet.

The rural community survey (n=1,000) was undertaken through face-to-face interviews with the individual primarily responsible for food purchases in their household. Households were selected using a multi-level proportional sampling method in three districts surrounding the GDFL factory, namely in Bogra, Sirajganj, and Naogaon. The urban school survey was undertaken in schools that were randomly selected from the 25 districts of Dhaka, Chittagong, and Bogra that had at least a 5 per cent extreme poverty rate. In each of these schools, 20 children between the ages of 8 and 12 were randomly selected for face-to-face interview.

4 GDFL and its value chain

Established in 2006, GDFL is a social enterprise that is a joint venture between Grameen Enterprises of Bangladesh and the French food conglomerate Groupe Danone. The enterprise has two social objectives. First, to bring improved health through better nutrition to the poorest

Table 1 Nutritional composition of Shokti+

Nutritional composition	Per 60g	% RDA
Energy (kcal)	71.6	–
Protein (g)	2.3	–
Lipids (g)	2.5	–
Carbohydrates	10.1	–
... of which sugars	3.8	–
Calcium (mg)	85	18.4
Phosphorous (mg)	67	18.7
Iron (mg)	3.3	30
Zinc (mg)	3.0	30
Iodine (µg)	40	30

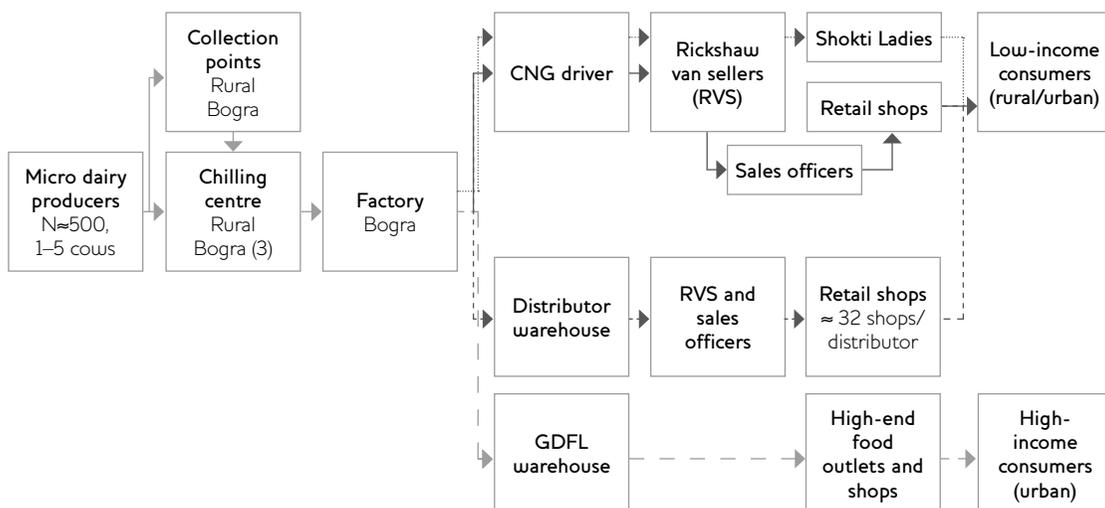
Source Sazawal *et al.* (2013).

children of Bangladesh. Second, to reduce poverty and create employment for local people, particularly through a rural distribution network of women in poor rural communities. Whilst GDFL aims to be financially sustainable, its performance is measured against attainment of these two social objectives. Towards this end, GDFL aims to leverage the resources of Groupe Danone as a global manufacturer and distributor of yogurt, with those of Grameen Enterprises as a major NGO engaged with poor populations in Bangladesh.

As of 2014, GDFL was engaged in the manufacture and distribution of two fortified yogurt products. The flagship product, Shokti+, is a fresh probiotic yogurt that is packaged in 60g plastic pots and sold for 10BDT (US\$0.12). This product requires refrigeration and has a shelf life of 22–25 days. A second product, Shokti Pocket, is ultra-heat-treated yogurt packaged in 40g tubes and sold for 6BDT (US\$0.07). Introduced in February 2014, Shokti Pocket does not require refrigeration and has a shelf life of 90 days. Both products are fortified with 30 per cent of the recommended daily amount (RDA) of the micronutrients zinc, iodine, iron, and vitamin A (Table 1).

GDFL received support from the Global Alliance for Improved Nutrition (GAIN) in establishing the initial formulation of Shokti+. Furthermore, an efficacy study was undertaken (see Sazawal *et al.* 2013) to determine the impact of regular consumption on the nutritional status of children. This study confirmed that consumption of Shokti+ resulted in the improved haemoglobin status of children that were otherwise iron deficient. On the basis of this efficacy study, GDFL recommends that the yogurt is consumed at least three times per week. Furthermore, the enterprise specifically targets children

Figure 2 GDFL value chain



Source Authors' own, based on interviews with GDFL senior management.

aged 3–12 years, in which high levels of deficiency in iron, zinc, and vitamin A are observed in Bangladesh.

The value chain for Shokti+ and Shokti Pocket is pictured in Figure 2. GDFL aims to procure as much of the milk they require as possible from around 500 small-scale producers; many of these producers had existing marketing relations with Grameen Enterprises. While no formal contracts are signed, GDFL guarantees the purchase of 100 per cent of the milk these farmers produce and pays a quality premium on the basis of lactose and fat content. Extension officers employed by GDFL provide dairy production education and training, artificial insemination and cross-breeding services, veterinary and medical services, and access to high-quality grass seed. This arrangement has allowed the enterprise to develop a relationship of trust with its producers; this is critical given the intensity of competition for milk in rural Bangladesh. Given the seasonality of milk production in Bangladesh, there are times when GDFL has to procure milk from the local market.

The producers from which GDFL procures transport fresh milk in metal cans to local collection points or direct to one of three chilling centres that have been established within a 30km radius of the factory. Any milk delivered to a collection point is transported to a chilling centre using a refrigerated truck. GDFL has positioned these collection locations to facilitate ease of delivery and to minimise the time milk remains un-chilled. Producers are paid the market price at the time of delivery. In addition, 1BDT per litre is deposited in a savings account and paid out every three months as a cash incentive for selling to GDFL. After the milk arrives at the factory, batches from each of the chilling centres are tested for pathogens, lactose, and fat content, then chilled to 4 degrees Celsius. The milk is pasteurised before entering yogurt production.

The GDFL processing facility is situated in Bogra, an area with a high unemployment rate and which is close to areas of milk production where Grameen Enterprises already operate. The facility was constructed in 2006, financed through a US\$1 million mutual fund established by Groupe Danone. The initial installed capacity of the factory was 1,600 tonnes per annum, but this was increased to 3,000 tonnes per annum in 2010. As of 2015, the facility was operating at around 60 per cent capacity.

From the factory, there are four distribution channels for Shokti+, three of which also distribute Shokti Pocket. First, distribution through the Shokti Ladies (dotted arrow flows in Figure 2) which play a central role in GDFL's distribution model. The Shokti Ladies are a door-to-door sales force comprising local women, delivering Shokti+ and Shokti Pocket daily to households along a specified distribution route in the rural areas of Bogra, Naogaon, and Sirajganj. Members of the sales force purchase the products using microcredit and sell them at a pre-specified price for a small profit. They are also paid a 'salary' of 0.5BDT per pot sold as a further incentive to maximise sales. Sales of Shokti+ and Shokti Pocket are also made through small retail shops in rural Bogra (continuous arrow flows in Figure 2). The products are delivered by rickshaw van sellers (RVS) who pick them up from delivery drivers who transport the products from the factory. Each RVS partners with sales officers to distribute the products to local retail shops.

Urban distribution of Shokti+ through retail shops in Dhaka, Chittagong and Bogra (dashed arrow flows in Figure 2) commenced in 2009 and extended to Shokti Pocket in 2014. These products are sold to urban distributors, and delivered to retail stores throughout these cities by RVS. GDFL remains involved in Shokti+ and Shokti Pocket to ensure sales are only made to outlets that have refrigeration capabilities, expired product is replaced, and that the products are being sold for the specified price.

GDFL started distributing larger 80g pots of Shokti+ to *high-income markets* in Dhaka and Chittagong (longer dashed arrow flows in Figure 2) to help offset the costs of distribution to low-income markets. The product is transported and stored in GDFL-owned and operated warehouses before being distributed to high-end grocery stores and retail outlets. The product is sold in packaging distinct from that sold in rural and urban low-income markets and at a significant price premium of 30BDT (US\$0.37).

5 Results

5.1 Effectiveness of strategies employed to address the challenges faced by GDFL

Applying the conceptual framework to the value chain for Shokti+ and Shokti Pocket, it was possible to explore the challenges faced by GDFL in establishing and maintaining a viable business model in the context of markets targeted at poor populations. In understanding these challenges, it is important to recognise that GDFL was one of the first businesses to market nutritionally enhanced processed food

targeted at poor communities, both in Bangladesh and internationally. Furthermore, single-serve packaged yogurt designed to be consumed as a snack food had not previously been available in Bangladesh. In launching Shokti+, therefore, GDFL was introducing a truly innovative concept into the marketplace.

A key challenge for GDFL is communicating the nutritional attributes of Shokti+ to consumers who were initially not used to claims being made about the health benefits of the foods they purchased, had little awareness and/or knowledge of nutrition, and are of limited literacy. At the same time, GDFL recognised that marketing costs had to be minimised in order to establish a price that poor consumers were able and willing to pay. A multi-pronged strategy is employed to address these challenges. Most fundamental is the name of the product; the word *shokti* means strength or energy in Bengali, thereby conveying to consumers, including those who are illiterate, the health benefits of the product. For those consumers who are literate, advertising in and around stores lists the nutrients provided. Nutrition education is also integrated into the various distribution channels (see Figure 2). For example, the Shokti Ladies and retail shop owners are educated on the nutritional attributes and health benefits of the yogurt and are charged with communicating these benefits to consumers. GDFL also takes the products to schools and conducts ‘mummy seminars’ as a means of raising awareness amongst students and parents.

The results of the survey in rural communities where Shokti+ is distributed suggest that GDFL has been successful in raising awareness of the nutritional benefits of these products. For example, 98 per cent of respondents who were aware of the Shokti brand, believed that the product was good for their child. Of these respondents, 82 per cent were able to cite correctly at least one potential benefit from consuming Shokti+. Furthermore, the nutritional benefit of Shokti+ is considered the most important attribute, with 56 per cent purchasing it because of its nutritional benefits. There is evidence, however, that not all purchasers of Shokti+ are convinced of the nutritional benefits to their children. For example, of respondents to the rural survey that had stopped consuming Shokti+, 20 per cent cited uncertainty over the nutritional benefits of the product.

To ensure consistent availability of Shokti+ and Shokti Pocket and at the same time limit distribution costs, GDFL has put great emphasis on proximity-based marketing, targeting poor communities that are near to its processing facility in Bogra. At the same time, the use of women within these communities to deliver the product direct to consumers, a so-called ‘last-mile’ distribution strategy, aims to minimise the time and effort required of consumers to access the product on a continuous basis. The fact that the Shokti Ladies are not required to provide any long-term commitment in order to distribute the product, however, means that there is a significant rate of turnover within the salesforce, causing disruption to the availability of the product in some instances.

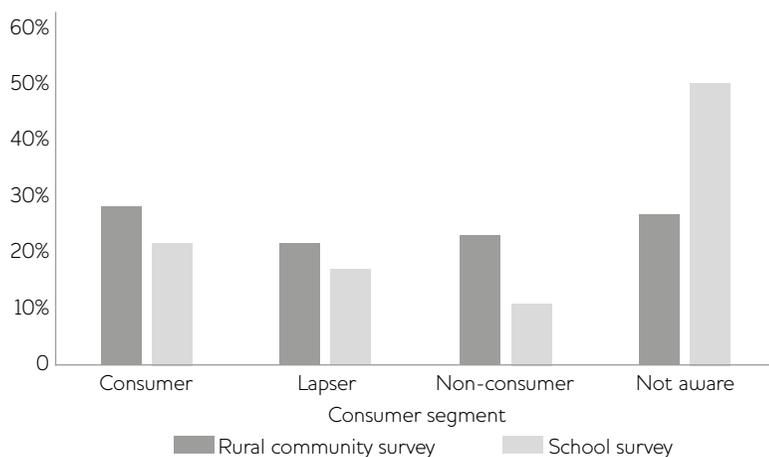
Amongst respondents to the rural survey, 27 per cent indicated that lack of availability of Shokti+ prevented them from consuming the product more frequently. Availability is also an issue with other distribution channels for Shokti+, most notably through schools. Amongst respondents to the survey of students in urban schools where Shokti+ is distributed, 52 per cent cited lack of availability as the primary reason for not consuming the product more frequently.

In order to extend its distribution network in rural areas, and also into urban centres, an increasing proportion of Shokti+ and Shokti Pocket has been sold through independent retail stores. A key challenge here has been the implementation of effective incentive mechanisms that aim to foster repeat purchases by consumers. Examples have included offering stickers with purchases of Shokti+ and reward cards whereby customers receive a stamp for every purchase that can be exchanged for prizes after a specified number of pots have been bought. GDFL has faced difficulty in ensuring that retailers use these incentive schemes appropriately; that is, they are specifically tied to the purchase of Shokti+ or Shokti Pocket rather than being used to reward customers more generally or benefit the retailer personally. Furthermore, there have been quality issues faced where retailers do not store Shokti+ in a refrigerator, either because facilities are not available or because these are used for other products that are perhaps perceived to be of higher commercial value.

The most critical, and also most problematic, issue for GDFL is the pricing of Shokti+ and Shokti Pocket. The pricing of these products must reflect the ability and willingness to pay of poor consumers given the degree to which they value the nutritional and other benefits they deliver. At the same time, the price must be sufficient to cover the costs incurred by GDFL and to provide a sufficient commercial return to the enterprise. Whilst a relatively small proportion of respondents to the survey of rural communities where Shokti+ is distributed indicated that affordability was the main reason they did not purchase (8 per cent), financial constraints were cited by 45 per cent of purchasers when asked why they did not consume Shokti+ more frequently. It is apparent, furthermore, that purchasers are highly sensitive to price changes. Over the period since 2007, the price of Shokti+ has more than doubled due, predominantly, to increase in raw milk prices. GDFL reports that, while they will eventually recover, sales decline significantly when prices increase even by small amounts. A key rationale behind the introduction of Shokti Pocket is to provide a cheaper alternative to Shokti+, facilitated by offering a smaller portion size and the lack of need for chilled distribution.

Whilst GDFL's marketing and distribution strategy appears relatively effective at creating awareness, and facilitating initial purchases of Shokti+, it is less successful at establishing regular purchase patterns. In the survey of rural communities where Shokti+ is distributed, whilst 73 per cent of respondents had ever purchased Shokti+, only 50 per cent had ever purchased the product in the last three months, and 28 per cent were current consumers (Figure 3). In schools where Shokti+ was

Figure 3 Frequency of purchase of Shokti+ by households in rural community and school surveys



Source Authors' own.

distributed, only 50 per cent of respondents had ever purchased the product, whilst almost 22 per cent had purchased in the last week. A further 17 per cent of schoolchildren had purchased Shokti+ in the last month. The need to expand the market for Shokti+ and Shokti Pocket, both through expanding the number of households that purchase these products and by increasing the frequency of purchase by purchasing households, is openly recognised by GDFL. This is seen as critical to the attainment of commercial sustainability of GDFL's business and also for the pursuit of established plans to expand production to new facilities.

Initially, GDFL focused on minimising costs throughout the value chain in order to achieve a price that was sufficiently low to enable poor consumers to be targeted. Over time, however, it became clear that costs could not be reduced to the degree required whilst still maintaining robust incentives throughout the value chain and meeting the broader social objective of GDFL. For example, offering employment and income-earning opportunities for milk producers and the Shokti Ladies is essential to the first social objective of the enterprise.³ An alternative strategy was therefore implemented, whereby the costs of producing and marketing Shokti+ to poor populations were defrayed (or maybe more accurately, cross-subsidised) through sales at higher prices to richer consumers. In 2010, GDFL started to distribute Shokti+ through modern retail stores in Bogra, Dhaka, and Chittagong. Given that these stores target much higher-income consumers, GDFL is able to sell an 80g pot of Shokti+ for 30BDT. Whilst currently only 5 per cent of production is distributed in this way, this has not prevented critics of GDFL from claiming it has compromised on its initial focus on the nutrition of poor communities. There is growing evidence, however, that parallel distribution to high-income markets might actually provide an effective mechanism through which costs can be defrayed sufficiently to contribute to the commercial viability of the business.

5.2 Evidence of nutritional impact

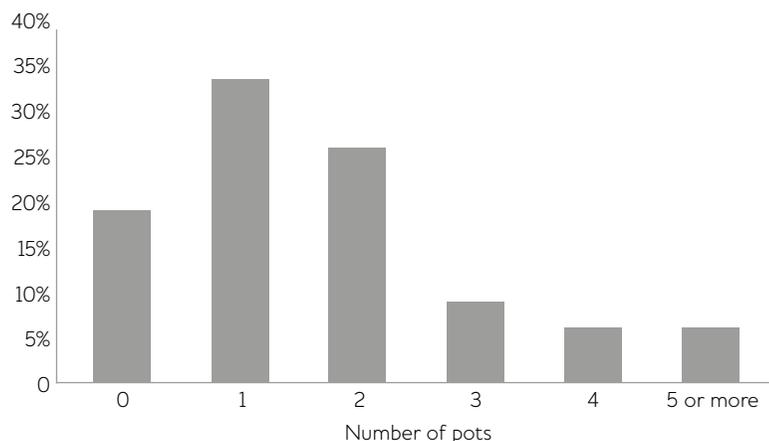
As outlined previously, a primary rationale for the establishment of GDFL was to promote improved nutrition amongst the poor through the distribution of a yogurt that was fortified with key micronutrients. GDFL recognises that the poorest households lack the economic ability to purchase a relatively high-value processed food such as yogurt. However, even households in the second and third income quintiles in the areas surrounding Bogra that are targeted by GDFL exhibit high levels of micronutrient deficiency, and indeed significant prevalence of stunting of pre-school age children (HKI and JPGSPH 2013). Thus, at least in principle, there is scope for Shokti+, which has been shown to be efficacious at enhancing micronutrient status when consumed in sufficient quantities (see Table 1), to have a positive nutritional impact on these target populations.

The results of both the rural community and school surveys suggest that levels of consumption of Shokti+ are generally below the three pots weekly that are recommended by GDFL. For example, in the rural community survey, within households that had purchased Shokti+ in the last week, only 21 per cent of children aged 3–12 years had consumed three or more pots in the last week (Figure 4). Almost 34 per cent of children in these households had consumed only one pot in the last week, whilst 19 per cent had not consumed any Shokti+. Across all households in the rural community survey, only 6 per cent of children had consumed at least three pots of Shokti+ in the previous week.

The targeting of consumers represents a difficult balancing act for GDFL. On the one hand, GDFL must sustain sufficient sales of Shokti+ and Shokti Pocket to sustain operations, achieved by selling to those willing and able to pay for the yogurt products. On the other, the degree to which GDFL has a positive and substantive impact on the nutrition of poor populations is dependent on targeting households in which children are most likely to be deficient in micronutrients. In the rural community and school surveys, diet diversity scores (DDS) are used as a proxy for the nutritional quality of children's food in the households of respondents.⁴ On average, children in households that had purchased Shokti+ in the previous week had a DDS of 5.2. This is greater than the mean DDS (4.0) for households in the Rajshahi division where Bogra is located, according to the Bangladesh Food Security Nutrition Surveillance Project (HKI and JPGSPH 2013). The mean DDS of children in households that had consumed Shokti+ in the last week exceeded that of children in households that had not consumed Shokti+ (ANOVA⁵ 0.0314) and those that had no prior awareness of Shokti+ (ANOVA 0.0208). These results suggest that consumption of Shokti+ tends to be greater in children with a more diverse (and by implication higher nutritional quality) diet.⁶ Whilst these children will undoubtedly benefit nutritionally from the consumption of Shokti+, the households in which they live are not those of most nutritional need.

A particular issue for GDFL is establishing incentive mechanisms through the value chain for those engaged in the sale of Shokti+

Figure 4 Frequency of consumption of Shokti+ by children in households that have purchased in the last week – rural survey



Source Authors' own.

and Shokti Pocket to target poorer households in which children are most likely to benefit nutritionally. The fact that the Shokti Ladies, for example, are paid according to the number of pots of yogurt sold, means that they tend to target existing (and often less poor) consumers for which less time and effort are required to make a sale. This is further evidenced by the average income of households consuming Shokti+. In the rural household survey, the mean weekly income of households that had purchased Shokti+ in the last week (2,807BDT) is significantly higher, for example, than households that are not aware of Shokti+ (1,818BDT; ANOVA <0.0001), and that had not been targeted by the Shokti Ladies.

6 Conclusions and recommendations

The case of GDFL illustrates the very considerable challenges faced in marketing nutrient-dense foods to poor communities. These challenges are symptomatic of the difficulties associated with communicating the benefits of foods that are nutritionally enhanced to consumers in general, creating and capturing value in the context of poor populations, and minimising distribution and marketing costs in low-income food markets. Evidently, GDFL has needed to change and adapt in response to both structural and emergent challenges over time. The importance of being able and willing to adapt is perhaps the biggest lesson to be drawn from the case of GDFL. At the same time, even a business that has been able to draw on the collective experience and resources of Groupe Danone and Grameen Enterprises is yet to secure its long-term sustainability, even after more than ten years of operation.

The particular examples of Shokti+ and Shokti Pocket highlight the very particular problems associated with efforts to market nutritionally enhanced foods that are novel and present very new food purchase and consumption scenarios to poor communities. Arguably, therefore, GDFL presents a more extreme example of the opportunities and challenges

associated with markets for nutrient-dense foods targeted at poor populations. The fact that GDFL has achieved daily sales in excess of 100,000 pots daily suggests that such challenges are not insurmountable. At the same time, questions inevitably remain about the scope for more novel nutritionally enhanced foods such as Shokti+ to have nutritional impacts on poor populations at scale, even in the medium to long term. Evidently, more analysis is needed, including of a broad range of business initiatives and ideally within the context of a consistent conceptual framework (such as that presented previously), so as to provide a more comprehensive picture of which products and through which business models achieve the greatest nutritional impact, and in what contexts.

The case of GDFL provides important lessons for other business-based initiatives aimed at promoting consumption of nutritionally enhanced foods by poor populations. First, the importance of distribution and marketing networks and establishing incentive systems that reward efforts to target poorer households. Second, the role of efforts to segment markets and to establish higher-priced sales to those who are less poor as a means to defray costs along the value chain. Third, the imperative of understanding the nature and importance of the value proposition presented as a nutritionally enhanced food to poor communities, and how this is (or is not) translated into the ability and willingness to pay a price that presents opportunities for businesses to achieve commercial sustainability in the medium term. Of course, the lessons from GDFL may not translate well into businesses of differing size and/or in distinct contexts. Again, this highlights the need for further analysis of business initiatives like that of GDFL.

In terms of nutritional impact, there is little doubt that promoting consumption of Shokti+ and Shokti Pocket brings benefit to the communities where GDFL operates. Shokti+ has been shown to have a substantive impact on the nutritional status of children when consumed in adequate amounts. Furthermore, the DDS of children in the rural community and school surveys indicate that there remains considerable scope for improvement in the nutritional quality of the diets they consume. At the same time, however, it is evident that GDFL does not (and indeed does not strive to) reach children in the poorest households and those that are likely to benefit most nutritionally from consumption of Shokti+ or Shokti Pocket. There is arguably a more general lesson from this finding. It is likely that business initiatives will struggle to reach those that are poorest, and it is for such households that public initiatives or public-private partnerships are most critical. Contrastingly private initiatives, including social enterprises such as GDFL, are more likely to play a role in improving nutrition in households that are less poor and that already have some discretion over their food purchases. However, this does not necessarily mean the potential for nutritional impact is diminished since even in these households the prevalence of micronutrient deficiency remains high, particularly in countries such as Bangladesh.

Notes

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 - 2 See for example: KeBal (Indonesia), Pushtikona (Bangladesh), Protein Kissee-La (Côte d'Ivoire), Nutriset (Niger), Britannia (India), Lisabi Mills (Nigeria), Dala Foods (Nigeria), Econocom Foods (15 African countries), Nutri'Zaza (Madagascar), Soy Sauce Fortification (China), Faire Tache D'Huile (Western Africa).
 - 3 Indeed, there may be a degree of incompatibility between the social objectives of GDFL. On the one hand, making efforts to enhance the income of small-scale dairy producers and women in local rural communities; on the other, targeting poor consumers who exhibit the greatest prevalence of micronutrient deficiencies.
 - 4 Respondents were asked to report the consumption of specified food groups by each of their children in the previous 24-hour period. A nine-point score was then constructed for the child in each household following the procedure laid out in the Bangladesh Food Security Nutrition Surveillance Project (HKI and JPGSPH 2013).
 - 5 ANOVA = analysis of variance.
 - 6 An alternative interpretation is that consumption of Shokti+ increases the diversity of the diet of children that are consumers. However, more in-depth analysis indicates that the vast majority of these children consumed some milk, such that the introduction of Shokti+ did not increase the value of their DDS.

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