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TECHNICAL REPORT

Methods to Measure the Food Environment and
A Reflection on Good Practices for Engaging the
Private Sector

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Bonnie McClafferty
Director of USA Office and the Agriculture for Nutrition Global Program
Global Alliance for Improved Nutrition
729 15th Street, NW
Washington, D.C. 20005
Tel: (202) 559- 8512
Email: bmccclafferty@gainhealth.org

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1. EXECUTIVE SUMMARY

Introduction

The Marketplace for Nutritious Foods (MNF) is a platform that fosters innovation and drives investment in the processing, packaging and/or of nutritious foods in Kenya, Rwanda, and Mozambique with the ultimate goal of improving nutrition through improved availability and affordability of nutritious food. The Marketplace provides access to knowledge, networks, and technical and financial assistance to selected businesses with the aim of improving the availability and affordability of nutritious foods in a way that is inclusive of low income consumers. The experience being gained through the MNF program will offer valuable learnings for the role of local food small and medium sized businesses to improve access to nutritious foods, and how best to support them. Processes and methods are needed to systematically identify those learnings to inform the MNF strategy. With the support of USAID under amendment 14, a series of case studies of the Marketplace for Nutritious Foods were undertaken to:

- (i) Identify, test, and apply innovative data collection methods for key outcome indicators of increased access to nutritious foods, at the consumer and market level by the MNF businesses;
- (ii) Identify successes and constraints experienced by businesses in achieving their goals, and assess the performance of the MNF Accelerator program in terms of its relevance and effectiveness to address key barriers for businesses;
- (iii) Identify the future potential and strategies for the MNF program and business models that would support further efficiencies, scale, and sustainability of reach through a cross-country review and analysis of case-studies.

To meet these objectives two main pieces of work were conducted: (i) a market- and consumer-level study and (ii) a business-level study. This work took place between September 2016 and December 2017 in all three of the countries where MNF operates, Kenya, Rwanda, and Mozambique. The following report provides a consolidation of the findings, their implications for the achievements of the Marketplace program to date, and a series of recommendations to strengthen the design and potential for impact of the Marketplace moving forward

Methods

Consumer and market level study

To address our first objective, we developed a measurement framework to assess the impact of interventions supporting small and medium enterprises (SMEs) aimed at improving food access. Through a review of existing literature and a technical advisory consultation we identified the food environment framework (Herforth and Ahmed, 2015) as the most appropriate and informative way to conceptualize impact. We expand on this work specifically by defining the *market* food environment and presenting a framework to measure it.

We define the market food environment as the dynamic system that both governs the delivery of food into markets and creates a context in which consumers interact with and purchase food. Key dimensions of the food environment relevant to the evaluation of interventions supporting food SMEs include the availability, affordability, desirability and convenience of foods as outlined by Herforth and Ahmed (2015).

We posit that each actor along the food value chain offers valuable insight from a measurement perspective and an opportunity to collect both subjective and objective measures of food availability, affordability, desirability and convenience. Collectively, these data can offer a comprehensive view of the market food environment, and

the forces that influence it. The measurement framework we present consists in systematically measuring the aforementioned dimensions at the market, vendor, and consumer level using four main methods: consumer surveys, vendor and markets surveys, qualitative interviews, and road to market mapping.

We describe road to market mapping, or market mapping, as the process of interviewing stakeholders all along the value chain of a specific commodity to understand how the product moves from production all the way to the end consumer. These data help illustrate the spatial flow of products and the direction and quantity of those flows for added insight into what shapes market food environment. While the information generated from the market mapping relates to an SME's full value chain, including production and distribution models, it describes the factors that contribute to a business's ability to impact availability and affordability at market level and is therefore described as part of the market level assessment.

The value of the measurement framework presented here is not in the novelty of individual measures but rather that it provides a structure, currently lacking from the literature and evaluation discourse that can be used to conceptualize and systematically measure the impact of interventions that aim to improve food access through markets.

Through a competitive bidding process, Altai Consulting was identified as a research partner to apply this measurement framework in five case studies of MNF businesses in Kenya, Rwanda, and Mozambique. While the conceptualization of framework was led by GAIN and the several experts (through a 2 day workshop), data collection was run independently by Altai. Case study businesses were selected to ensure range of product type, business model, and scale. These included (i) Tarakwo, a milk co-operative in Kenya selling milk through automated milk dispensers, (ii) Pioneer, a Tilapia farmer in Kenya selling small and medium sized fish, *kadogo*, (iii) Trabac, a medium scale egg producer in Rusine, Rwanda, (iv) Vegman, a large scale vegetable producer in Chimoio, Mozambique and (v) Alves, a producer of affordable meats products in Maputo, Mozambique. In Kenya and Rwanda, we conducted consumer and market level research. For the 2 businesses in Mozambique, the assessment was focused on market level research and more in-depth market mapping. This approach was deemed more feasible due to challenges in obtaining ethical approval for human subjects' research.

Business Level study

To address our second and third research objectives, we contracted Dalberg Consulting following a competitive bidding process to conduct an independent, portfolio wide assessment of MNF's impact on supported businesses. This assessment was **centered on three assessment criteria that sought to answer the following questions.**

- **Relevance to SME barriers:** What are the barriers that SMEs face that might limit their contributions to increase access to nutritious food? How relevant is the MNF's offering to SMEs, given these barriers?
- **Progress of SMEs:** What progress have participating SMEs made, in terms of key business metrics like production, sales, and pricing that might enable them to grow, achieve financial sustainability and professionalize?
- **Efficiency of delivery:** How well-designed is the MNF, and how efficient is its execution?

To analyze the MNF program against these criteria, Dalberg employed a methodology that aimed at balancing analytical breadth and depth. This methodology centered on deep-dive case studies of seven SMEs; a light-touch portfolio review of an additional 16 SMEs; and a review of key business metrics for all SMEs within the MNF Accelerator portfolio (note that this does not include all businesses participating in the Community of Practice). To ensure that any recommendations offered would be grounded in a full view of the portfolio, the assessment

team spoke with nearly 70 percent of the SMEs supported by the MNF. This helped identify common strengths to leverage and limitations to address across the portfolio. To complement this broader view, the team conducted in-depth studies of seven businesses to understand, in detail, the specific issues that individual SMEs are facing, how the MNF has helped them address these issues, and what the key lessons learned for the MNF are from each engagement. In depth interviews with key informants, quantitative measures of business performance, and desk research were the primary methods for data collection.

Key Findings

Below are highlights of key findings that emerged from the business and consumer level work.

Market land consumer level assessment

Availability

- **The MNF project is effective in increasing the production and sales of nutritious foods.** All businesses studied saw an increase in sales and production, with the exception of Alves, in Mozambique where the economic crisis occurred. Smoothing of temporal availability across seasons and within the day, was a particular strength of the project, in the case of seasonally available or highly perishable foods as was observed in the case SMEs producing pasteurized milk, fresh vegetables and fish.
- **A significant portion of sales are in markets accessed by low income communities, with some exceptions. Businesses couple retail to lower-margin low-income markets with high-margin wholesale to higher-income markets.** The majority of Vegman's increased production (40%) was channeled to low-income markets in Chimoio and to previously untapped rural markets via wholesale to small-scale retailers and to mid-size retailers outside of the region, respectively. Tarakwo's increases in production were channeled to downtown Eldoret and low-income suburban markets. It is among the largest suppliers of pasteurized ATM milk and increases in availability were perceptible among consumers and vendors, some of whom sourced their milk from Tarakwo. Trabac tripled its production capacity, from 18,000 to 54,000 eggs per month. At the time of the study, however, the vast majority of its eggs were sold to high-margin wholesale markets in urban areas where they are less likely to reach low income consumers, leaving availability of eggs in nearby rural markets largely unchanged. Contrary to Trabac, Pioneer is able to sell tilapia in markets accessed by low income Kisumu consumers precisely because low margins from these sales are off-set by (i) being a fast moving good in the region, and (ii) high-margin wholesale of large fish to Nairobi, that cover the cost of running the Pioneer business. Though 70% of produce by weight is sold to Nairobi, the remaining 30% represent a substantial contribution to availability of tilapia in the Kisumu area, which is perceptible to consumers in the markets where Pioneer fish is sold, among high income and low-income consumers alike. Alves adopted a similar model to Pioneer (i.e., low cost sales off-set by higher priced goods), but the onset of the economic crisis forced the sale of their retail outlets in low-income markets and a shift towards supermarkets targeting middle to low income, which represent 85% of Alves sales. Alves' former stores still exist, but are owned by individuals (often times former employees). Alves maintains a sales relationship with some of these shop owners and therefore still sells a portion of their product in low-income areas, but a smaller amount.
- **MNF businesses can help smooth seasonal availability where it is an issue.** While MNF was able to increase the production of nutritious foods overall, the increased availability of these foods during lean seasons was a particularly salient dimension of availability. In the case of both Tarakwo and Pioneer, consumers only perceived increases in availability during seasonal scarcity of this food. In the case of Tarakwo, the high

production volume, and cold storage capacity, allows for constant milk supply during the year and during all times of the day, in contrast to hawked milk and to smaller dispensaries.

Affordability

- **The MNF project is effective in reducing the production costs of nutritious foods, and the extent to which these translate to reduced prices varied largely as a function of middle-men.** The grants and technical assistance provided by the MNF project allowed businesses to reduce the cost of production or develop new products (e.g. pasteurized milk) earlier than otherwise possible. Tarakwo and Pioneer offer highly competitive pricing due to their high production volumes, supported by the project, which are transmitted to consumers through their retail locations. In the case of Vegman and Trabac, on the other hand, reductions in prices are absorbed by middlemen, without a concomitant detectable improvement in affordability. With improved feed quality and optimized hen spacing with the larger henhouse, Trabac is able to offer competitive egg prices. However, these better prices are only transmitted to consumers who purchase directly from the farm (65RWF). As there are few externally visible features that drive consumer egg choice, egg prices in an area are relatively standard. Retailers who purchase from Trabac and sell nearby absorb the savings. Additionally, the low prices attract wholesalers from high-value markets farther away who are able to amortize transport costs and sell eggs at the standard price. Similarly, while Vegman was able to reduce its production costs for tomatoes, the price paid by consumers remained stable and the lower wholesale prices were absorbed by retailers. Many of the small scale wholesalers that make up most of Vegman's market are low-income consumers themselves, but assessment of the livelihoods gains to these consumers was outside the scope of this assessment. Similarly, Alves was able to more directly reach low-income consumers through its formerly owned outlets strategically located in low income areas.
- **The offer of small serving sizes make foods within reach of the low income consumers.** Prices represent only one aspect of affordability, which is relative to a specific individual. Because low income consumers have smaller incomes and cash flow, the amount of a specific food that they are able to purchase per occasion is also an important factor of affordability. In addition to offering competitive prices, both Pioneer and Tarakwo both offer small serving sizes, which make the foods within reach of low income consumers. This was confirmed by consumer perceptions of affordability and the proportion of low-income consumers able to purchase these products.

Desirability and Convenience

- **The proximity of a retail location emerged as a main driver of food choice.** In all of the businesses for which consumer surveys were conducted, proximity was the major determinant of market choice. With the exception of Rwanda, where people travel for market days, the vast majority of consumers walk fewer than 2km to the markets that they purchase foods from. While this does not reflect an impact of the MNF, it provides important insights into future planning.
- **Products supported by MNF are highly desirable and where innovations around convenience were introduced they were largely successful.** While it was not an explicit aim of the program to improve the desirability and convenience of *all* foods, the program was designed to expand the production of foods that have an established demand, and were desirable and convenient a priori, or to improve demand and desirability. Tilapia fish and eggs are highly desirable foods supported by the program. Consumer surveys revealed that while pasteurized milk is more desirable in intervention areas, raw milk remains the preferred type overall and that this is in part due to the added value and function of cream for consumers. Tarakwo

milk is convenient for consumer because of the small sizes that can be purchased and the cold temperature of the milk, which allows consumers without refrigeration to preserve milk overnight. Pioneer's innovation around small size fish emerged as important for consumers who want to offer each person their own fish at a meal. The price of full size tilapia makes this cost prohibitive. Alves products on the other hand had limited desirability as a result of formulation changes aimed at keeping prices stable during the economic crisis.

Methods for Impact Measurement

- The market food environment, which considers both aspects that bring foods into markets and the ways in which people interact with those foods to make consumption decisions, provides a useful framework to evaluate interventions supporting small and medium enterprises aimed at increasing access to nutritious and safe foods.
- A measurement framework that guides data collection at consumer, vendor, and market levels provides useful and actionable results in the context of complex interventions engaging SMEs. The combination of data collected at vendor, consumer and market level, provided us with informative insights on the program's contribution to market food environments as well as several barriers and opportunities for engagement with SMEs around nutritious foods.
- Identification of appropriate counterfactuals for attributing changes in the market food environment to programs in the context of consumer based studies presents a substantial challenge. The inherently dynamic nature of businesses, i.e., that they will sell their goods in the markets that offer them the best returns and shift rapidly in response to cues from the market, results of important limitations for typical matching or randomization approaches. The triangulation of multiple data sources used here, including results from comparison markets and the value chain analysis provided useful insights suggestive of program impacts but has several limitations for attributions of changes in the market and for quantifying such impacts. Econometric methods that can model changes in consumer demand as a function of changes in availability, for instance would offer more comprehensive understanding of impacts at the consumer level and eliminate the need to identify a true control.

Business-Level Assessment

Grantees find the technical assistance offered by GAIN to be highly useful, whether it is focused on basic managerial skills or on reaching low-income populations with nutritious foods. Many of the businesses that are being supported by the MNF were lacking in basic skills required to run a business (e.g., accounting, financial management). The MNF mechanism has helped to build up the capacity of several early-stage businesses.

The Marketplace's financial support offering is highly relevant to SMEs operating in Mozambique, Kenya, and Rwanda, and is particularly helpful to businesses who seek to increase production capacity to meet existing, unmet demand. MNF grants help address one of the biggest barriers to growth for SMEs, lack of access to finance, making it highly relevant to what SMEs need. Further, for businesses whose main challenge was constrained production, and who had few problems at other points in the value chain (e.g., were not facing major problems related to accessing inputs or finding distribution and sales channels), the MNF grant is catalytic. When demand outstrips supply, the grant allows for growth in production capacity at a much quicker pace than if SMEs had to raise money elsewhere.

In focusing most of its attention on increasing production of nutritious foods, however, the MNF at times misses critical pieces of the puzzle around how to reach low-income consumers. As mentioned, most of the

financial assistance delivered through the MNF is focused on increasing production capacity. However, in some cases, production capacity is not the main bottleneck that an SME might be facing. Limpho in Mozambique is currently facing challenges related to demand generation and marketing for peanut butter. Many of the other businesses in the MNF portfolio have only rudimentary expertise in product distribution or, even when they are active players in production distribution, have limited relationships and infrastructure for targeting food product distribution to poor populations.

The expectations of what business should achieve within the program timeline does not always match the reality of operating a business in the African context. According to experts at D. Capital Partners, impact investors in sub-Saharan Africa typically work on timelines of three to five years, or more. With current MNF funding sources, the program will close before the proposed changes in the company for example, equipment purchase and installation are complete and therefore before the potential impacts on production, distribution etc. are fully realized. This may result in an underestimation of the longer term potential for impact of the MNF, and apparent poor cost efficiencies in the short term.

The process used to select businesses for grants can be improved by simplifying business plans and separating due diligence process. The time it takes for an SME to move from application submission to selection for business planning support and to disbursement of the first grant can be very long, thus leading to funds being used sub-optimally when the external conditions of the SMEs change during this period. For at least five grantees, the gap between application and first disbursement lasted over six months, primarily due to the length of the business planning process. Of course, producing a high-quality, time-consuming business plan can be a valuable process for certain SMEs. However, six months is a long time in the dynamic world of SMEs, and the challenges and opportunities that they named in their application may not necessarily be the same ones that they are facing at the time of granting. It is important to conduct proper due diligence, and to ensure that the businesses selected are ready to be capable of absorbing the funds, but this process should be separate from generating the business plans.

Conclusions

Taken collectively, our results point to the following conclusions:

- **Financial and technical support to SMEs producing nutritious foods is an effective way to increase the production of nutritious foods.** We observed consistent improvements in the production capacity and sales of nutritious foods in the businesses studied. Compared to baseline, servings produced increased on average 54% in the 3 months after the first grant was provided. During the same time period, revenues increased in Kenya and Rwanda, with a small decrease in Mozambique likely due to the economic crisis.
- **Financial and technical support to SMEs can reduce prices, but these lower prices are not always passed on to consumers.** Where efficiencies in production were created and the price of production was reduced, these savings were not consistently passed on to the end consumer. This was observed more so in businesses that operate on the production end of the value chain where there are middle actors in the value chain and the MNF grantee has less control over the prices passed on to the consumer. MNF grantee businesses that operate at retail tended to have more control over prices transmitted to consumers. In future, the MNF could seek to link SMEs directly with retail markets in low income areas to mitigate this.
- **The proximity and appearance of retail locations are important considerations in targeting low income consumers.** Translating increases in production into improvements in availability depend in part on the location and appearance of shops and these factors should be explicitly taken into consideration when

working with SMEs. Proximity of location is a major driver of market choice. Qualitative data revealed that despite competitive prices at Pioneer shops and in supermarkets where Alves products are sold, the upscale appearance and location of these retail points were deterrents for lower income consumers. Positioning retail outlets in areas where low income consumers live and work, and specific messaging for low income consumers are potential strategies to consider.

- **Distribution models change as business grow, and these have different implications for reaching low income consumers.** Of the five businesses studied in the market and consumer level piece, all of those that began as smaller retail operations made significant moves toward selling increased production via wholesale. The implication here is not that wholesale should be discouraged but rather that it is important to understand how businesses will scale up in order to ensure growth that is inclusive of low income consumers.
- **Seasonality plays a significant role in determining availability and affordability, and local SMEs may be particularly well positioned to help smooth seasonal availability.** Seasonality emerged as a significant issue in three of the five businesses studies. While Tarakwo improved availability and affordability overall, the most significant effect was during the dry season. Pioneer's impact on both perceived availability and affordability was apparent only in the dry season.
- **The market food environment, measured at consumer, vendor and market level, is an informative way to conceptualize and measure interventions that support SMEs with the aim of improving access to safe and nutritious foods.** The measurement framework presented here, which proposes systematically applying consumer surveys, market and vendor surveys, market mapping, and qualitative interviews collectively to describe the market food environment proved to be an informative methodology to understand the contribution of MNF. This methodology and framework can be applied to future assessments for similar interventions. Coupling this with econometric modeling may help address the challenges of attribution.
- **Access to finance is a highly salient and common barrier to SME growth.** Additional barriers that emerged were limited managerial skills, technical deficiencies, marketing and access to inputs. The MNF is particularly adept at addressing the first three (see below).
- **Managerial and technical skills are important barriers for SMEs advancement. Technical assistance (TA) provided by the MNF can be highly effective to address these barriers but priorities must be driven by the SMEs themselves to ensure relevance and buy-in.** Lasting change within SMEs to managerial and technical needs requires their buy-in to the importance of the issues and to the approaches to addressing them. The utility and adoption of changes based on TA was maximized where priorities for that assistance was clearly guided by SME needs and not prescribed by GAIN or external forces.
- **There is a unique opportunity for GAIN and similar organizations to provide much needed TA related to food safety and nutrition to SMEs.** In addition to the financial and broader TA needs, the assessment highlighted specific gaps related to TA around food safety and nutrition, needs that were identified and valued by SMEs. The marketplace developed a unique strength in providing TA on food safety and product development. This skill may be transferrable beyond the scope of the MNF.

Implications for design

Based on the findings of the study, five main considerations for the design of projects supporting SMEs with the aim of improving nutrition stood out.

- **Consider the full value chain when selecting grantees and designing assistance for grantees.** For investments in SMEs to have an impact on consumer-level access, businesses must have reliable access to

inputs and stable distribution channels, as was highlighted in both the market and businesses level studies. This can be achieved by (i) focusing on a smaller number of larger, more established businesses or (ii) focusing in a smaller number of value chains and working throughout the entire value chain.

- In contexts where value chains are highly developed and there is significant development of the private sector, it may be most impactful to work with fewer, more advanced businesses. Investments in this context have the potential to create efficiencies that transfer down the value chain and to the consumer. The focus on medium scale enterprises would limit the effort of providing basic management services, and the number of grants disbursed. This is likely more feasible in Kenya, where there is more variability in SME size.
 - In contexts where the private sector is less developed and there are fewer SMEs, it may be most impactful to work all along the value chain and take on more of an incubation role. This can ensure that gains to a specific business are not limited by underdeveloped or unreliable supply or distribution channels that limit gains to consumers. Such investments would also have greater potential for 'ecosystem effects,' as they could encourage multiple players to enter the sector. This is likely more suitable to a context like Rwanda, where the private sector for food is less developed and there are fewer SMEs responding to calls.
- **Partner with other organizations to provide a full suite of services to SMEs and focus GAIN technical assistance efforts on nutrition and food safety.** As the assessment revealed, small and medium enterprises have different needs. Smaller enterprises require more business development services and technical assistance, than their medium counterparts but managing the many third-party consultants needed to provide that broad-based and diverse support is highly demanding. The extent to which such specialization is feasible will depend on the opportunities to link to other organizations/ groups providing the other types of TA needed. Several alternatives exist to do so including, establishing formal partnerships with (i) local financial institutions that can better manage the paperwork and due diligence processes that come with giving grants and (ii) other accelerators that specialize in different areas of technical assistance.
 - **Reduce the pull of free money by creating greater buy-in and commitment from business.** While providing grants to SMEs is a critical element of the MNF model, it also has the potential risk of creating dependence on grant funding, or worse, encourage businesses to absorb more than they can handle at their current stage, simply because the funds are available. To ensure that these risks are mitigated, it is worth considering strategies to reduce the pull of free money. Potential strategies include (i) simple or tiered co-investment, where the first payment in a grant and the second is conditional on co-investment, (ii) zero interest loans or (iii) delivery of an independent investment pitch after business planning has been completed.
 - **Distribution channels require support to ensure that market growth is inclusive of regions serving low income consumers.** The extent to which lower prices and increased production translate to improved affordability and availability among low income consumers is a function in part of retail locations and the distribution models that reach them. The following strategies can be considered in the design of the intervention.
 - Working specifically with SMEs that have a retail level, where price control is greater, and reductions in production costs are likely to benefit consumers is one avenue.

- Connecting SMEs without direct retail locations to networks in low income communities, in addition to any other distribution networks is a second avenue. Pioneer and Alves are good examples of this.
- Providing support to tailor marketing specifically for low income consumers groups to make retail locations inviting in addition to accessible.
- **Ensure business readiness or clear pathway to readiness but minimize length of time between application submission and disbursement.** Some MNF grantees did not receive financial assistance until a year after their application was submitted. By this point, many of them had experienced significant changes, either internally or externally, that made their original application less relevant. Keeping application processes short, and business plans flexible, would make this less likely. While there are many necessary, time-consuming parts of the process (e.g., site visits) creating efficiencies in the process wherever possible is key. The most important strategy noted here, that should be considered by other accelerators, is to separate the due diligence and business planning processes such that only funded businesses receive full business plans. Consultants can be hired to run important diagnostics to select businesses, and separately, more business plans can be developed.

2. INTRODUCTION

Markets matter for nutrition and health

Today, poor quality diets are the leading contributor to the global burden of disease. This is the result of a divergence in the incentives that govern our food system and our values for human health. Increasingly, efforts to improve nutrition and diets of the world's most vulnerable populations have been oriented towards the food system. Important advancements to improve nutrition have been made on the production end of the value chain: increasing productivity, linking farmers to markets, and enhancing the nutritional value and diversity of foods produced (Du et al., 2015). The vast majority of the poor worldwide, however, are net buyers of food (Tschirley et al, 2015; de Janvry & Sadoulet, 2011) and the links between agricultural production and consumption therefore also depend on nutritious foods available in markets.

Improving access to nutritious foods through market-based interventions, therefore, represent another important strategy to improve nutrition of the world's poor, yet private sector engagement for nutrition has been limited. Food value chains and private sector actors involved in processing, distributing and retailing those foods, thereby will influence key dimensions of food access such as the availability, acceptability, affordability, and nutritional content of foods in the marketplace (Hawkes and Ruel, 2012), and hence are likely to contribute to nutritional adequacy in rural (Hirvonen & Hodinnott, 2014) and urban (Duran et al 2016) environments. Therefore, comprehensive, multi-sectoral nutrition strategies should consider specific strategies to support private sector actors in improving access to nutritious foods through market, that are inclusive of lower income groups who are most likely to benefit. In sub-Saharan Africa, small and medium enterprises (SME) make up the vast majority of the private sector. Supporting SMEs producing nutritious foods to overcome barriers to growth has the potential to improve market food environments at scale for the poor. Because partnerships between business and the public sector for nutrition to date have been few, basic knowledge exist gaps on how to effectively engage the private sector and what the impact of investments might be.

We don't know how to engage the private sector

Further examination is needed of the practical terms of how private sector involvement might be promoted and the challenges that such promotion initiatives face. Businesses targeting lower income consumers, particularly small- and medium scale businesses, face many challenges in establishing sustainable, profitable operations, and it is recognized that supports are necessary to foster their establishment (Humphrey et al., 2016). Early stage support includes access to affordable finance, technical assistance such as for improved management skills as well as food processing and handling, and linkages to market environments, including but not limited to knowledge of markets, and branding and marketing strategies to reach consumers. While it is recognized that supports are necessary to foster their establishment (Humphrey et al., 2016) it is unclear which specific supports are needed to promote the production of nutritious foods targeting low-income communities.

Methods to assess the impact of interventions are lacking

Further, appropriate methods to measure the impact of agricultural or food-systems based approaches on improving the availability and affordably of nutritious foods need to be developed. Methods to assess key factors in the food environment have recently been reviewed (Herforth and Ahmed, 2015) and available indicators have been compiled (FAO 2016), and some work to use existing data to track availability and affordability is on-going. These efforts have revealed a gap in established indicators and measurement methods to determine impact of private sector investment programs on the accessibility of nutritious foods in the food environment and on consumer perceptions and behaviors within the food environment that may lead to

increased consumption of nutritious foods. Furthermore, businesses are dynamic in nature and distribution models evolve in response to market forces. Meaningful research to assess the impact of private sector investments on access to nutritious foods will require a shift from study designs traditionally used to assess nutrition interventions (e.g. RCT) towards alternate but robust methodologies (e.g. longitudinal spatial mapping of food availability).

The Marketplace for Nutritious Foods

The Marketplace for Nutritious Foods (MNF) is one example of a mechanism that recognizes the role SMEs do and could further play in feeding low income populations. Under GAIN's Agriculture for Nutrition Initiative and with support from USAID, the MNF program was established to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for lower income households in Sub-Saharan Africa. The experience being gained through the MNF program will offer valuable learnings for the role of local private sector businesses to improve access to nutritious foods, and how best to support them.

Objectives of the research

We proposed a three-fold approach using case studies to assess achievements, future potential, and to guide the MNF program forward. The first approach aimed to determine how best to assess the impact of MNF-supported businesses on increasing access to nutritious foods. The second considered the achievements of MNF businesses and their ability to implement businesses plans. The third looked across businesses and country programs to consider the relevance and effectiveness of the MNF program operations and design, the potential for the program to achieve sustainability and scale, and provide recommendations for the program moving forward. The specific objectives of this assessment were to:

- (1) Identify, test, and apply informative data collection methods for key outcome indicators of increased access to nutritious foods, at the consumer and market level by the MNF businesses;
- (2) Develop and apply a case study approach to identify successes and constraints to businesses in achieving their goals, and assess the performance of the MNF Accelerator program in terms of its relevance and effectiveness to address key barriers for businesses;
- (3) Identify the future potential and strategies for the MNF program and business models that would support further efficiencies, scale, and sustainability of reach through a cross-country review and analysis of case-studies.

To address these questions, case study assessments were conducted across Kenya, Rwanda and Mozambique. To address objective one, we collected consumer and market level data to measure the availability, affordability, convenience and desirability of MNF supported foods among five businesses. To address objectives two we conducted a deep dive case study assessment of seven businesses, which included desk review, qualitative interviews with business owners, stakeholders along the supply chain and other relevant experts. To address objective three, we conducted qualitative interviews and collected survey data from the larger MNF grantee portfolio and consulted experts in respective contexts.

3. STRUCTURE OF THE REPORT

We begin this report with a description of the Marketplace for Nutritious Foods Program (MNF) and its program impact pathway (Section 4).

Section's 5 and 6 are dedicated the identification and application of informative **market and consumer level measures** to assess the impact of interventions investing in SMEs to increase food access. In Section 5, we present the measurement framework. In Section 6, we discuss and interpret the results of the case studies collectively as they relate to each dimension of the measurement framework and reflect on the utility of the framework itself. Finally, we share conclusions and lessons learned from the consumer and market based work as it relates to engaging the private sector for nutrition and the ways in which we can measure impact. Detailed results of the case studies are in Annex 1.

Section 7 is dedicated to objectives two and three, which aim to determine **business level impacts of MNF and implications for future design**. We discuss the findings of the assessment with regards to relevance of project program offerings to SME barriers, the impact of the project on SME growth, and the efficiency of program delivery.

In section 8 we provide overall potential strategies to improve project design emerging from the entire body of work.

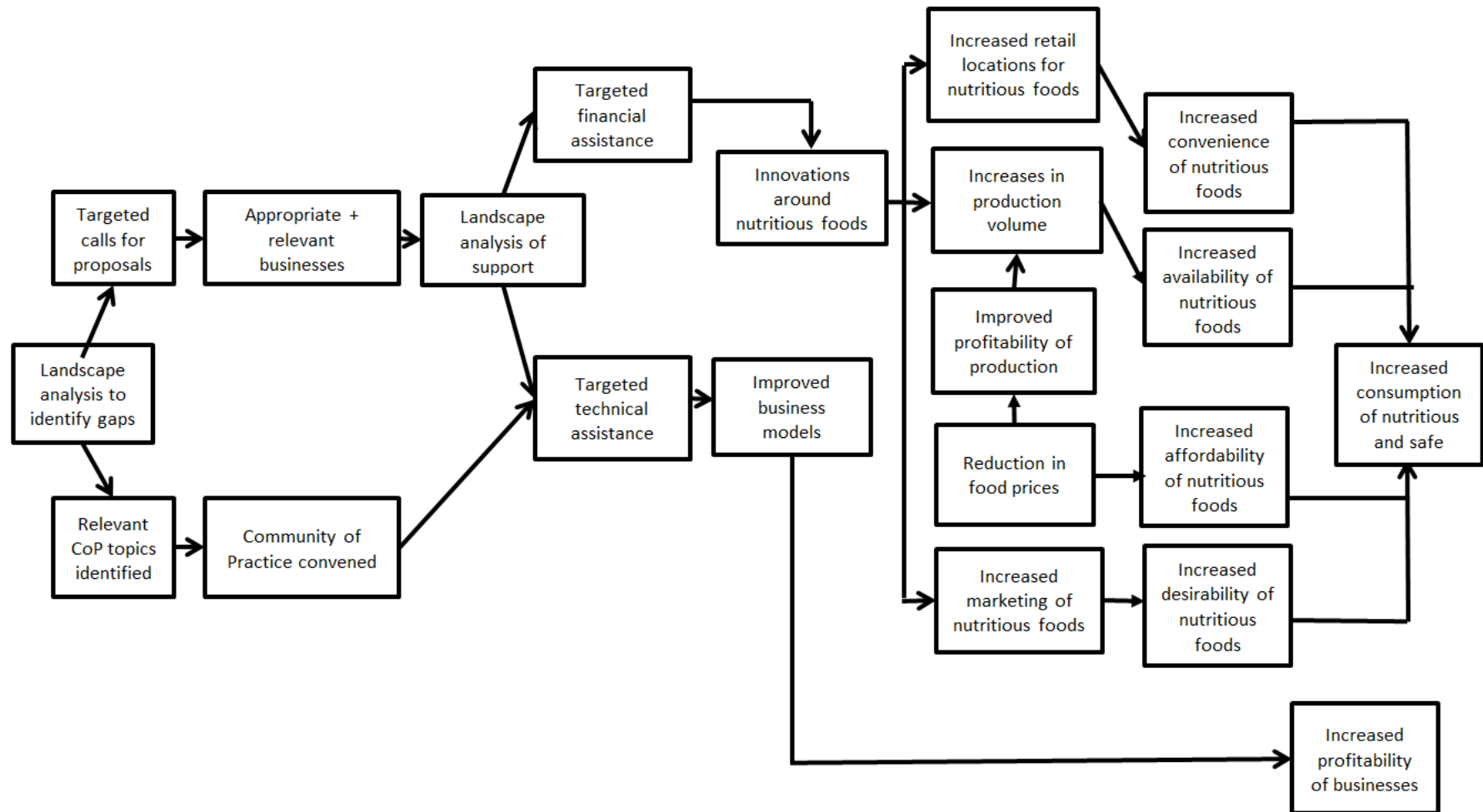
4. SUMMARY OF PROGRAM ACTIVITIES

The Marketplace for Nutritious Foods (MNF) is a platform that fosters innovation and drives investment in the production, marketing, and consumption of nutritious foods made from locally-produced agricultural products. The Marketplace has adopted a two-pronged approach by (1) supporting a broad network of stakeholders, with information and knowledge, through a Community of Practice, while (2) targeted technical and financial support is offered to promising, innovative enterprises through the Innovation Accelerator granting mechanism.

The Community of Practice is a network open to entrepreneurs, businesses, universities, regulatory bodies, NGO's, associations, and anyone else interested in knowing more about running a business that helps transform agricultural potential into safe, nutritious foods. The Community of Practice convenes regularly for networking and capacity building events. Between meetings, the Community stays in touch through various outlets including monthly newsletters, Marketplace websites, a dedicated Facebook page, and a business directory.

The Innovation Accelerator is the MNF's technical assistance and component that regularly opens calls for proposals in which companies are invited to submit concepts for investible ideas to increase the accessibility of nutritious foods. Companies are selected for support through a 2-stage review process based on their ability to improve the (i) production, (ii) affordability, and (iii) convenience, or (iv) safety of nutritious foods with a specific value proposition to reach low-income markets. In stage 1, proposals are reviewed by a local Technical Advisory Committee based on their potential for impact, the nutritional quality of the product and the health of the businesses. The most promising proposals are selected to receive technical assistance to support the development of a feasible business plan. Once business plans are completed, they undergo a stage 2 review by the Marketplace Investment Committee (MIC), which selects the most investible and impactful concepts to receive grant funding and additional technical assistance to support the implementation of the business plan. The selection process from application to the completion of business planning takes between six months and a year. Additional technical assistance is provided based on the needs of the specific business by an expert in the content and grants are delivered in tranches contingent on the reaching of agreed upon milestones. The program impact pathway is presented in Figure 4.1, below.

Figure 4.1 – Marketplace for Nutritious Food Program Impact Pathway



5. METHODS AND METRICS TO MEASURE THE IMPACT OF THE MARKETPLACE FOR NUTRITIOUS FOODS PROGRAM AND CASE STUDY APPLICATION.

5.1. Objective

The objective of the work presented under this section was to identify methods and metrics that can be used to measure the impact of the Marketplace for Nutritious Foods (MNF) program, and develop a measurement framework, more broadly, for the evaluation interventions supporting SMEs with the aim of improving food access.

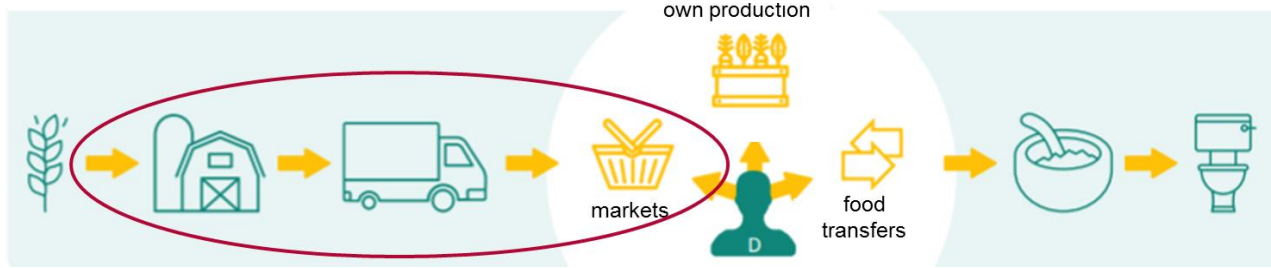
5.2. Methodological approach

Through a review of existing literature and a technical advisory consultation that brought together experts in food systems, value chains, the food environment, economics, and focused ethnographic studies, we identified the food environment framework (Herforth and Ahmed, 2015) as the most appropriate and informative way to understand the impact of intervention supporting SMEs with the aim of increasing food access. We expand on this concept to describe the *market* food environment in detail and present an associated measurement framework. In the following sections, we describe the food environment and our definition of the market food environment and present our measurement framework.

5.3. The Market Food Environment

The food environment has been defined several ways. The Food Environment Working Group defines the food environment as the interface that mediates one’s food acquisition and consumption within the wider food system (FEWG, 2017). The definition builds on previous work by Swinburn et al. which positions the food environment, more broadly as the collective physical, economics, policy and socio-cultural surroundings, opportunities and conditions that influence people’s food and beverage choices and nutritional status in the context of obesity (2014). These definitions build on existing concepts of food security (World Food Summit, 1974) and encompass both personal and external factors that affect food choice. For a comprehensive review and explanation of the personal and environmental aspects of the food environment see FEWG, 2017. Here, we focus our discussion of the food environment and associated measures, in the context of markets. Building on the concepts above, we define the market food environment as the dynamic system that both governs the delivery of food into markets and creates a context in which consumers interact with and purchase food. Key dimensions of the food environment relevant to the evaluation of supply chain interventions include the availability, affordability, desirability and convenience of foods as outlined by Herforth and Ahmed (2015). Figure 5.22 depicts the food environment in the context of the wider food system (FEWG, 2017). We’ve altered it to highlight in the pieces of the food supply chain relevant to the market food environment.

Figure 5.2 – The food environment in context of the wider food system (FEWG, 2017).



5.4. Presentation of the Measurement Framework

The food production value chain includes a number of actors, all of which in part contribute to market food environments (Figure 5.3). Vendors and consumers occupy the physical space traditionally referred to as markets, where food is acquired. It is also important to note other actors— farmers, traders, wholesalers and processors – determine the qualities and flow of foods that enter markets and therefore also play an important role in shaping the market food environment.

We posit that each actor along the value chain offers valuable insight from a measurement perspective and an opportunity to collect both subjective and objective measures of food availability, affordability, desirability and convenience. Collectively, these data can offer a comprehensive view of the market food environment, and the forces that influence it. Below we present a measurement framework and describe four data collection methods that leverage actors along the value chain to measure the market food environment (Figure 5.4). These include (i) market and vendor surveys, (ii) consumer surveys, (iii) road to market mapping, and (iv) in depth qualitative interviews with consumers and vendors. We describe these as methods that can be used in tandem to offer a full picture of market food environments, but these can be applied individually.

It should be noted that these methods, in and of themselves, are not novel measurement tools. The value of the measurement framework here is that it provides a structure, currently lacking from the literature and evaluation discourse, that can be used to conceptualize and systematically measure the impact of interventions that aim improve food access through markets.

Figure 5.3. Value chain approach to the measurement of market food environments

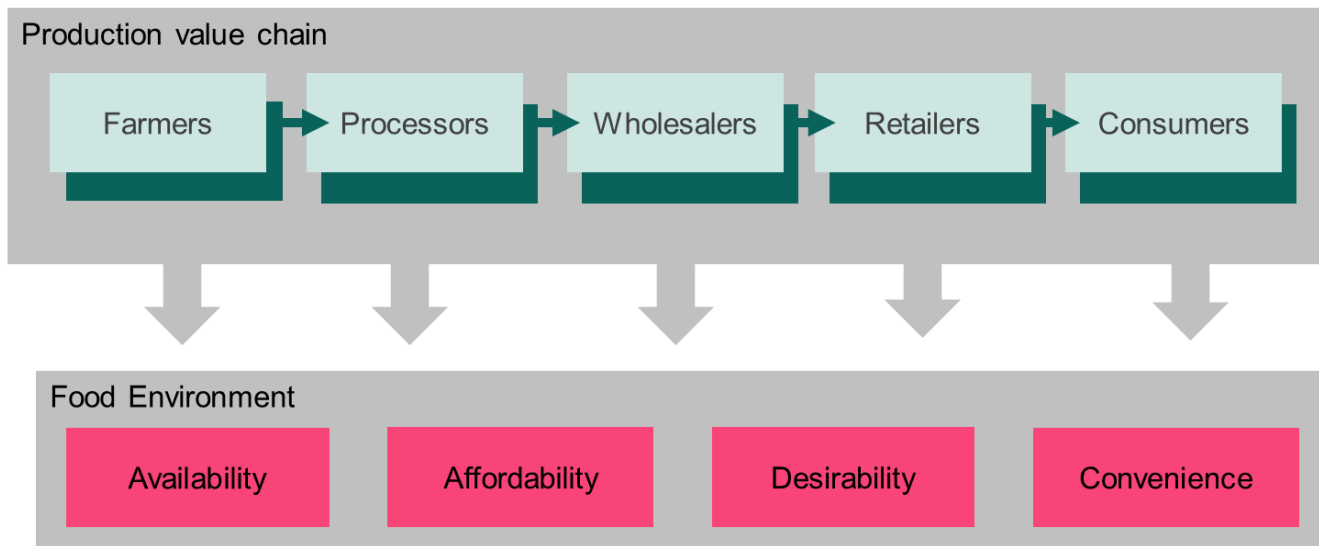
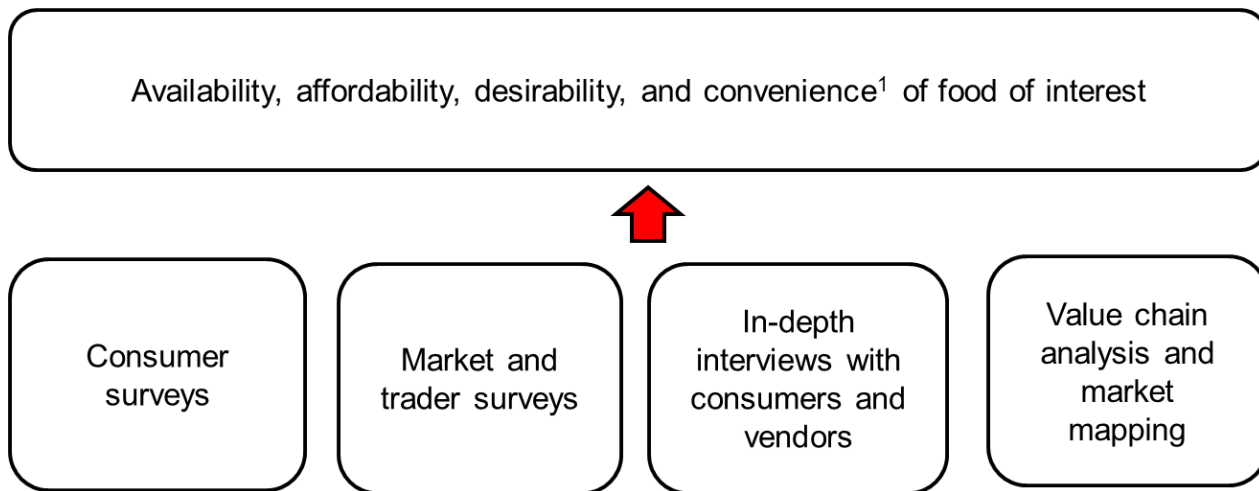


Figure 5.4. Measurement framework for market food environments



¹(Herforth and Ahmed, 2015)

Consumer Surveys

Consumer surveys present the opportunity to measure aspects all aspects of the food environment, as defined here. Measures of perceived availability (Lucan, 2013; Caldwell, 2009), affordability (Graham, 2013; Sharkey) and desirability (Graham, 2013; Sharkey) of certain food groups have been measured on Likert point scales. These applications have been centered on the personal food environment but can also be anchored in specific markets². Consumer surveys are particularly helpful to assess the more subjective and consumer centric dimensions of the food environment, convenience and desirability. For a comprehensive review of consumer based indicators to measure the food environment see (Hotz, 2017).

Market and Vendor Surveys

Market and vendor surveys are useful for objective measures of availability and affordability. Specific measures of availability that can be obtained by vendor surveys include a count of vendors selling a certain food or food group, the quantity sold by each, as well as the source of the food any associated seasonal or diurnal variation in availability. Affordability measures that can be obtained include selling and purchasing price, and prices relative to similar commodities. Finally, market and trader surveys can describe properties of the foods or food groups available (e.g. pasteurized, vs raw; highly processed, minimally processes, unprocessed) that relate to convenience and desirability.

The World Food Program has conducted Vulnerability Assessment Mapping (VAM) surveys monitor to prices of staple commodities in different regions by conducting trader and key informant surveys that ascertain the price, quantity, and source of foods in markets around the world. These serve to identify populations vulnerable to food insecurity, and have been used to predict the utility of food aid interventions in different contexts. The FAO describes vendor survey procedures for agro-processors to identify opportunities and assess costs (Sheperd, 2003). Both of these tools, and others, can be adapted and applied to describe market food environments.

In developed contexts, store observations and counts have been used to describe the market food environment. This is useful in more formal markets or where supermarkets are present, but may have limited applicability in low income contexts.

² For instance, Ghahram et al. measure desirability by asking “At the stores where I usually buy my food the condition of fresh fruits and vegetables is poor.” To gather insights on consumer desirability of certain foods within a specific market context, the question can be adapted.

Road to Market Mapping

We describe road to market mapping, or market mapping, as the process of interviewing stakeholders all along the value chain of a specific commodity to understand how the product moves from production all the way to the end consumer. This includes as a series of key informant interviews that consist in sequentially interviewing a sample of actors at each step of the value chain. Producers of a specific commodity or food group are identified and interviewed to understand their production costs as well as their main wholesale and retail clients. A sample of their wholesale clients is then interviewed to understand the costs associated with their purchase and sale of products and their main clients. This process is repeated down to the end consumer. From this data a map can be created that illustrates the spatial flow of products and the direction and quantity of those flows. Mapping the flow of products in space provides added insight into what shapes market food environments, the flow of food products and the broader availability of foods.

Qualitative ethnographic Interviews

Qualitative in-depth interviews present an opportunity to gather valuable insight into changes that survey data cannot capture, and a fuller understanding of changes to the food environment as perceived by consumers and vendors. Day-long ethnographic interviews with consumers and vendors can provide insight into the uses of specific foods and food groups and tap into dimensions that are difficult to measure via survey, such as inter- and intra-food group substitution and emerging market competition. The day-long nature of the interview allows for observation in addition to the sharing of information from the interviewee, which can provide valuable context for research. Framing the interviews around the most significant change within a certain time period can be a particularly useful methodology in the context of an intervention evaluation (Davies, 1996).

Broader circumstances for use

For many programs that intervene in the supply chain, the markets that will carry the product or commodity supported may be wide-ranging and unpredictable. The private sector actors that are involved in bringing foods to markets are dynamic and guided by the best market opportunities. Where production value chains are more complex, for instance in an intervention supporting small and medium businesses to expand their production of nutritious foods, randomization of the intervention by markets is not feasible. This presents a challenge to identifying appropriate markets to monitor or sample from and informative counterfactuals.

Consumer and vendor surveys should be conducted in markets where the intervention effects have the potential to be concentrated and detected. Otherwise, resources would be more widely towards more extensive market mapping. An exercise must be undertaken at baseline to identify the potential or target markets where the intervention effects are likely to occur and matched counterfactuals. Repeated cross sectional surveys can be conducted to understand how consumer perceptions shift over time. In this scenario, consumer surveys should be supplemented by the other methods described above, in order to offer a fuller understanding of program effects. Where value chains are shorter and less complex, for instance in an intervention supporting rural producers to access local markets, randomization may be feasible and can be pursued. The sampling strategy will depend on the objective of the work. To understand overall changes in consumer perceptions, conducting random consumer surveys can be useful. To understand consumer perception or the factors that drive consumer choice of a specific food or food group, sampling at point of sale may be more informative.

6. CASE STUDY FINDINGS

In this section, we discuss and interpret the findings of the case studies collectively, and reflect on MNF’s contribution to availability, affordability, desirability and convenience of foods and reflect on the measurement framework in light of this application. The full results of the case studies are presented in Annex 1.

6.1. Objective

The objective of the work presented under this section was to determine, as best possible in a cross sectional assessment, the contribution of the MNF program to the market food environment by dappling the measurement framework, developed in the previous section, to a five case studies of business supported by the Marketplace for Nutritious Foods in Kenya, Rwanda and Mozambique. These businesses were selected to represent a breath of commodities, geographic locations, tenure in the project, and business and distribution models. Altai Consulting was hired as a research partner and was responsible for data collection and analysis.

6.2. Methods

Businesses selected

A total of five businesses were selected for inclusion in the study, summarized in Table 6.1. Briefly, these included (i) Tarakwo, a milk co-operative in Kenya selling milk through automated milk dispensers, (ii) Pioneer, a Tilapia farmer in Kenya selling small and medium sized fish, (iii) Trabac, a medium scale egg producer in Rusine, Rwanda, (iv) Vegman, a large scale vegetable producer in Chimoio, Mozambique and (v) Alves, a producer of affordable meats products in Maputo, Mozambique. A more detailed description of each business and its products is available in Annex 1.

Table 6.1 – Table of five studied businesses

| Country | Mozambique | | Kenya | | Rwanda |
|----------|------------------------------------|------------------------------------|-------------------------------|----------------------|--------------------------|
| Location | Chimoio | Maputo | Eldoret | Kisumu | Kigali |
| Project | KoBen / Vegman fresh vegetables | Alves & Companhia meat products | Tarakwo Dairies company | Pioneer fish farm | Trabac egg production |

Sampling

For each business selected a mapping exercise was undertaken to identify the locality of MNF business outlet and vendor locations, as well as the markets that exist in these areas. A sample of one to four markets was included in the study based on the number of markets identified. For each MNF market selected, a control market was selected and matched for size, types of products sold (e.g. vegetable market, fish market), distance to major trade routes and livelihood characteristics of the surrounding region. The matched markets serve as a control to understand how the market environment would have evolved in the absence of intervention, and to compare this with MNF market food environments. The markets identified represent the sampling frame for all data collection. The overall sampling frame and data collection is described below; the specific sampling for each business is presented in each respective case. Table 6.2 summarizes the actual sample sizes for all data collected.

For consumer surveys, a sample size of 200 random shoppers per market was selected based on a previous study conducted by GAIN in Kenya investigating the same outcomes and which showed meaningful differences across groups (Hotz, 2016). Surveys covered perceptions of availability, affordability, desirability, and convenience of the foods of interest as well as consumer purchasing habits and demographic characteristics¹. An additional 200 consumers were sampled at point of sale to understand perceptions and purchasing habits among specific consumers of the MNF supported foods. A sample size of approximately 600 consumers, therefore, was interviewed per businesses.

A sample size of 20-40 vendors was targeted per case. Surveys covered the age of the businesses, price points, volume of products purchased and sold.

Day long interviews were conducted with ten consumers and vendors, from MNF ‘intervention’ markets and control markets. An additional two focus groups with consumers was also conducted for each case. Criteria for inclusion in the interview and focus groups varied by case, but broadly, respondents were segmented based on the type of product purchased. For instance, in the case of Pioneer, a tilapia producer, focus groups were segmented based on the types of fish consumed, to understand the key factors that drive consumer choice and aspects of desirability as it relate to fish. Human subjects research was only conducted in Kenya and Rwanda, where ethical approval was obtained. In Mozambique, where ethical approval was not obtained within a timeframe to complete the work, the road to market mapping piece was expanded.

For the road to market mapping, a sample of approximately ten members at each step of the value chain (following the producer) was interviewed. In the case of Alves and Vegman, in Mozambique, the sample was elevated. These interviews covered sale and purchase prices and vendor relationships and served to understand the flow of the MNF product and the value added at each level of the value chain.

Table 6.2. Sample Size for Qualitative and Quantitative Case Studies

| | Kenya | | Rwanda | Mozambique | |
|--------------------------------------|-----------------|-------------------|-----------------------|------------|-------------------|
| Location | Eldoret | Kisumu | Kigali | | |
| Project | Tarakwo Dairies | Pioneer fish farm | Trabac egg production | Alves meat | Vegman vegetables |
| Intervention market consumers | 254 | 304 | 250 | N/A | N/A |
| Control market consumers | 286 | 282 | 216 | N/A | N/A |
| Point of sale consumer | | 47 | 159 | N/A | N/A |
| Intervention market vendors | 35 | 15 | 47 | N/A | N/A |

¹ It is worth noting that in this type of intervention assessment it is important to compare the supported food to the ‘status quo’ food, which represents the food usually available prior to the introduction of the MNF/intervention product. This is deemed the most useful counterfactual to the MNF product. To understand how an intervention has changed the food environment, it must be compared to the original environment. Ultimately, in the businesses surveyed all foods supported existed in their current form prior to the intervention, and as such were compared to the same foods. However in the case where novel products are introduced it is important to consider the status quo.

| | | | | | |
|--------------------------------|----|----|----|-----|-----|
| Control market vendors | 24 | 39 | 77 | N/A | N/A |
| Ethnographic interviews | 10 | 10 | 10 | N/A | N/A |
| In-depth interviews | 6 | 5 | 4 | N/A | N/A |
| Focus groups | 2 | 2 | 2 | N/A | N/A |
| Road to market | 20 | 40 | 24 | 54 | 55 |

Data collection tools.

Questionnaires were developed jointly by GAIN and Altai drawing on some of the existing perception questions developed for high income countries (Lucan, 2013; Caldwell, 2009), and using ranking methods such as the Likert Scale, which have been commonly and successfully used to evaluate ‘food access’ in developing contexts . To ensure the questionnaires were substantively relevant and to check our assumptions on factors related to desirability and convenience, focus groups were conducted with consumer and vendors to inform tool development. In these focus groups, the major comparable foods, trends in consumer purchasing, and food uses were identified to inform tool development.

Data Collection

Data was collected between May and July of 2017. Consumers were randomly selected among shoppers making purchases in the local food market using the street intercept methodology, i.e. a quantitative research survey whereby respondents are intercepted in public spaces, most often markets or malls. The process involves stopping shoppers and administering a survey on the spot (or alternatively inviting them to a research facility nearby to complete the interview). Vendor and consumer surveys lasted approximately 30 minutes and were conducted in the relevant local language. Interviewees and focus group discussants were identified with help from key informants. Focus groups lasted approximately two hours, and ethnographic interviews the entire day. Respondents from the qualitative sample were compensated for their time.

Surveys were conducted using structured questionnaires which were uploaded onto electronic tablets using the SurveyToGo software. The data was collected daily by synching the tablets with the online software. Key Performance Indicators (KPIs) were collected and reviewed daily allowing to monitor the data collection process and add interview locations when necessary. The main KPIs were number of people approached, interviewed, refusing to answer, under age and who did not consume or buy milk as well as gender, average age, household income, education level and type of milk bought. Qualitative interviews were recorded and transcribed.

Altai Consulting and GAIN provided tools (questionnaire and detailed sampling and methodology) and training materials and Altai’s local partner Sagaci Research implemented the research on the ground (with Altai and GAIN’s presence and supervision). The field survey was preceded by a two-day training and a one-day pilot by Sagaci and Altai with the presence of a GAIN staff member. The training and pilot allowed to further refine the methodology as well as certain aspects of the questionnaire.

Quality control was ensured through a combination of GPS monitoring (all interviews’ GPS coordinates were recorded and verified), consistency monitoring (questionnaires lasting less than fifteen minutes or failing to meet most of consistency checks were cancelled) and call-back monitoring (a percentage of all interviewees were called by phone and asked a few questions to ensure that they had indeed been interviewed).

Ethical Approval

Ethical approval was sought for human subjects research in with relevant authorities in each country. In Kenya and Rwanda ethical approval was received from AMREF and the National Rwandese Bioethics Committee in a timely fashion. All participants were informed of the study's purpose and of the voluntary and confidential nature of the interview. Informed consent was affirmed by a written signature, and a copy of the consent form including contact information for study coordinators was provided to each participant. In Mozambique, ethical approval was not received from the National Bioethics committee due the nature of the suggested revisions provided by the committee and time constraints. Comments received addressed the nature of the intervention (e.g. the nutritional value of foods supported) and not the research at hand. As a result it was not possible to incorporate the suggested changes and still answer our research questions. For example, comments received included (i) the removal of exclusion criteria for consumers who do not consume the food group of interest and (ii) deletion of the demographic questions used to proxy income. These questions were seen as influencing consumers to consume MNF foods and intrusive, respectively. Incorporating these changes would result in a large number of missing data as consumers who do not at least sometimes consume the food group of interest could not answer the questions in the survey and (ii) not enable us to understand reach to low income consumers. In light of these challenges and the complex nature of the value chains in Mozambique, it was deemed more appropriate to focus the assessment on the market mapping and increase the sample of respondents interviewed.

Data Analysis

Quantitative data comprising intervention and control groups is presented as bi-variate analyses of variables. Descriptive statistics are presented for point-of-sale data. It is important to note that all comparisons to determine the contribution of the intervention to outcomes of interest are made between the intervention and control groups, as these populations were sampled in the same manner in order to be comparable. The point of sale sample serve as a descriptive group to understand specific characteristics and habits of consumers. Demographic data will be compared across all groups to understand who the consumers of MNF supported products are, however perceptions of availability, affordability, desirability and convenience are compared between random consumers of intervention and control markets. Data was analyzed in STATA 13.0 and p-values for Chi Square and Rank sum test, to correct for multiple comparisons are presented where relevant. Qualitative data was coded for emergent themes (Glaser and Strauss, 1980).

6.3. Discussion of Results

This section discusses the influence of the MNF activities on market food environments through a collective review of the case study results and reflects on the measurement framework. In the following section, we distill the overall learning from the market and consumer assessment and discuss their implications for program design. Affordability and availability are key components that the MNF project aimed to impact, but given their importance to understanding consumer choice behavior we included convenience and desirability as part of the assessment.

6.3.1. AVAILABILITY

Across all case studies we observed an increase in the production of nutritious foods as a result of program investments. However, food availability also has important geographic and temporal dimensions to consider. In order to understand the effect of the intervention on food availability we first discuss the flow of foods supported by MNF and the distribution models that governed this and second, seasonal variability in that flow.

Spatial availability

Market mapping showed that among businesses that began primarily as retail operations, increases in production were accompanied by an expansion of sales in existing local markets but also increases in high-margin wholesale markets further away. As businesses grew and were able to access wholesale markets, distribution models evolved towards a profitable equilibrium of wholesale and retail. This observation does not suggest that either distribution model is more or less suited to improving availability for low income consumers, but rather that it is important to understand the scale up distribution models of businesses in order to maximize the impact of investment on the availability of foods for a specific population of interest.

While all businesses increased their production and sales of foods, the distribution of these foods varied significantly, and has implications for availability in our population of interest – low income consumers. Tracac tripled its production capacity, from 18,000 to 54,000 eggs per month with the support of the MNF. At the time of the study, however, the vast majority of its eggs were sold to high-margin wholesale markets in urban areas where they are less likely to reach low income consumers, leaving availability of eggs in nearby rural markets largely unchanged. Consumer perceptions of availability and vendor surveys in the markets close to the Tracac farm selected for inclusion in the study confirm this². Although Tracac plans to sell part of its eggs through three branded kiosks, two of which would be positioned in low income markets, the kiosks have not yet opened. Given that these shops had not yet opened, it may have been pre-mature to assess this businesses' contribution to egg availability. However, it is still important to note that scale up models may change in ways that do not contribute to improved availability among low income consumers, specifically.

Pioneer began its commercial production of kadogo (i.e. small size fish less than 250g) and full sized tilapia (larger than 250g) with the support of GAIN. Contrary to Tracac, Pioneer is able to sell tilapia in markets accessed by low income Kisumu consumers precisely because it couples these sales with high-margin wholesale of large fish to Nairobi. Kadogo sales command a small margin but move quickly because of their low price in Kisumu. The fish sold to Nairobi offers high margins that cover the cost of running the Pioneer business. It's worth clarifying here that the low prices of kadaogo are not artificially depressed by the grant support received, but rather are kept low because of sales to high-profit markets. Though 70% of produce by weight is sold to Nairobi, the remaining 30% represent a substantial contribution to availability of tilapia in the Kisumu area. This increase in availability of tilapia is perceptible to consumers in the markets where Pioneer fish is sold, among high income and low-income consumers alike.

Despite the onset of the economic crisis, Alves was still able to increase its production of meat products and moved towards wholesale due to the unsustainable cost of maintaining its retail locations. The resulting shift increased availability predominantly in middle to low income supermarkets, which represent 85% of Alves sales.

Tarakwo and Vegman moved from predominantly wholesale models towards retail. In the case of Vegman, a smaller portion of increased production (20%) sold at the shop increased availability for middle and high income consumers. The majority of increased production was channeled through wholesale to markets in Chimoio via small-scale retailers and to mid-size retailers outside of the region. For Vegman, this was the most effective channel to reach low-income urban consumers and previously untapped rural markets, respectively. Tarakwo's increases in production were channeled to downtown Eldoret and low-income suburban markets. Their move

² While perceived availability was sometimes significantly lower in the intervention markets, this was likely an artifact of the inherent differences in the markets compared, notably the large size of the control markets, as discussed in the results. Prior to MNF intervention, Tracac had stopped all sales of eggs, so a negative impact on egg availability is not plausible.

away from wholesale to processors increased the availability of pasteurized milk in Eldoret in a way that was inclusive of low income consumers. Increases in availability were perceptible among consumers and vendors, some of whom sourced their milk from Tarakwo.

Temporal availability

Seasonality emerged as an important factor affecting food availability for low income consumers. While MNF was able to increase the production of nutritious foods overall, the increased availability of these foods during lean seasons was particularly salient dimension of availability but unique to 2 businesses. In the case of both Tarakwo and Pioneer, consumers only perceived increases in availability during seasonal scarcity of this food. In the case of Tarakwo, the high production volume, and cold storage capacity, allow for constant milk supply during the year and during all times of the day, in contrast to hawked milk and to smaller dispensaries. Pioneer's continual harvesting keeps fish production high even during the periods of scarcity for wild caught fish, and as qualitative insights revealed, their close proximity to markets allows vendors to respond to increases in demands quickly. The implication here is that the an added value of the Marketplace and working with agri-businesses more generally, may be with regards to improving temporal availability in addition to quantities of foods. Supporting businesses that process and sell highly nutritious, but seasonally available foods is one potential criteria that accelerators can select for to maximize impact on availability.

6.3.2. AFFORDABILITY

We discuss affordability in terms of prices but also as it relates to consumer purchasing power.

Price transmission

The grants and technical assistance provided by the MNF project allowed businesses to create efficiencies in their production value chains and reduce the cost of production or enter into new value chains earlier than otherwise possible. For instance, investments in Vegman allowed for reductions in fuel costs and better wholesale prices of tomatoes and cabbage and the grants to Tarakwo allowed the business to purchase equipment to begin the process of milk pasteurization. Tarakwo might have been able to access a bank loan in order to purchase the equipment needed to retail pasteurized milk, but the costs of the loan repayment would figure in the price paid by consumers until the loan was payed off. Given the economic climate in Mozambique, Vegman would likely have had to save the funds for the farm electrification. Vegman may have experienced the same reductions in production costs and better wholesale prices, but significantly later. In this sense, MNF acts as an *accelerator* of businesses and creates opportunities to lower the cost of nutritious foods, relative to others. While the Marketplace was quite successful in decreasing production costs, the extent to which savings were passed on to the consumers varied.

With improved feed quality and optimized hen spacing with the larger henhouse, Trabac is able to offer competitive egg prices. However, these better prices attract wholesalers from high value markets farther away who can are able to amortize transport costs and sell eggs at the standard price. Even in sales to nearby local retailers, the savings from Trabac's low price eggs were absorbed by these retailers. As there are few externally visible features that drive consumer egg choice, egg price among retailers is relatively standard at 100RWF cooked and 70RWF uncooked. Trabac eggs are sold at a low price only at direct retail locations (65RWF). Similarly, while Vegman was able to reduce its production costs for tomatoes, the price paid by consumers remained stable and the lower wholesale prices were absorbed by retailers. Many of the small scale wholesalers that make up most of Vegman's market are low-income consumers themselves, but assessment of the livelihoods gains to these consumers was outside the scope of this assessment. Pioneer and Tarakwo on the

other hand, offer highly competitive prices for their products as they do not share margins with any additional actors. Alves was able to more directly reach low-income consumers through its outlets strategically located in low income areas.

The observation here is that among businesses with direct retail locations savings were more likely to transmit savings to consumers. However, it is important to stress that this emerged from a sample of five businesses and does not imply that direct retail is a necessary means to lowering prices for consumers. Instead, the implication is that it is important to understand and consider downstream value chain dynamics when, supporting businesses that operate in complex value chain, to ensure that savings can in part be channeled to consumers³.

Consumer purchasing power

Prices represent only one aspect of affordability, which is relative to a specific individual. Because low income consumers have smaller incomes and cash flow, the amount of a specific food that they are able to purchase per occasion is also an important factor of affordability. In addition to offering competitive prices, both Pioneer and Tarakwo both offer small serving sizes, which make the foods within low income consumers' reach. This was confirmed by consumer's perceptions of affordability and the proportion of low-income consumers able to purchase these products. Small size packaging as a means of making products more affordable is a strategy that may lend itself well to SMEs that are targeting or looking to enter low-income markets. Alves, on the other hand, offers competitive pricing for its meat products but the serving sizes sold in supermarkets make these products a significant investment for low income consumers. In more informal markets, where links and patties can be sold individually, these products are likely to be more affordable.

6.3.3. DESIRABILITY AND CONVENIENCE

While each project did not specifically intend to improve desirability and convenience of foods, these are additional dimensions of the food environment, identified as part of the assessment, that play a role in determining consumer food choice. It was deemed important to understand both (i) the projects' contribution to bringing foods into markets, and (ii) how aspects of these foods relate to consumer choice. Desirability and convenience are closely related concepts and are discussed in tandem here.

By working with existing businesses that bring foods to market, there is a level of consideration for consumer desirability inherent to the design of the program. Unlike an incubator, which supports new businesses to design and develop entirely new products, MNF acts as an accelerator for existing businesses to grow or slightly expand product lines for which they have an existing demand. In this sense, there desirability is taken to account in the businesses that are supported and further in the marketing support that is offered to grantees.

Consumer surveys and interviews were the primary means of determining desirability and convenience. In the case of Tarakwo, these revealed that while pasteurized milk is more desirable in intervention areas than in control areas, raw milk remains the preferred type overall and that this is in part due to the added value and function of cream for consumers. Cream tends to be separated from pasteurized milk, but consumers use this cream for cooking. Freshness consistently emerged as the most important factor consumers consider, across all income groups, in purchasing milk, and the fear of milk adulteration from hawkers and dairy shops in the dry

³ In the case of Tracac, for instance, more deliberate support for retail may be an avenue to improve reach to low income consumers. However, the retail approach is non-optimal for Vegman.

season emerged as highly salient in interviews. Understanding the qualities of a product that consumers consider when making purchases is key to ensure that increased availability and affordability translate to increases in purchase, and consumption. In the case of Pioneer, which sells a fish that is already highly desirable interviews confirmed that price is the most important factor driving food choice.

In all of the businesses for which consumer surveys were conducted, proximity was the major determinant of market choice. With the exception of Rwanda, where people travel for market days, the vast majority of consumers walk fewer than 2km to the markets that they purchase foods from. This is useful to note when working with SMEs and suggests that the choice of retail location can have a significant impact on consumer targeting.

6.3.4. METHODOLOGICAL DISCUSSION

We applied our measurement framework in the context of five MNF case studies. The combination of data collected at vendor, consumer and market level, provided us with informative insights on the program's contribution to market food environments. For instance, the market mapping information in the case of Trabac allowed us to understand how the distribution of eggs had evolved, and offered an added perspective on availability than did the consumer surveys. Combining survey perception data, vendors surveys and qualitative insights in the case of Tarakwo helped to understand how pasteurized milk tides over milk availability and affordability in the dry season and how perceptions of milk adulterations of hawked milk during the dry season contribute to the increased purchase of pasteurized milk.

The market food environment, which considers both aspects that bring foods into markets and the ways in which people interact with those foods to make consumption decisions, provides a useful framework to evaluate private sector interventions aimed at improving nutrition. A measurement framework that guides data collection at consumer, vendor, and market levels provides useful and actionable results in the context of complex private sector interventions.

Future work should continue to build on this framework, as we have on the work of others. Identification of appropriate counterfactuals for attributing changes in the market food environment to programs in the context of consumer based studies presents a substantial challenge. The inherently dynamic nature of businesses, i.e., that they will sell their goods in the markets that offer them the best returns and shift rapidly in response to cues from the market, results in important limitations for typical matching or randomization approaches. The triangulation of multiple data sources used here, including results from comparison markets and the value chain analysis provided useful insights suggestive of program impacts but has several limitations for attributions of changes in the market and for quantifying such impacts. Econometric methods that can model changes in consumer demand as a function of changes in availability, for instance would offer more comprehensive understanding of impacts at the consumer level and eliminate the need to identify a true control.

6.3.5. LIMITATIONS

As with all research this work is not without limitations. Below we discuss two main limitations to this work and the ways in which we attempted to address them.

First, the cross-sectional nature of the assessment and the matching of controls limit our ability to causally relate the activities of the intervention to the differences observed in the intervention and control groups. As was observed in the case of Rwanda, significant differences may exist between the intervention and matched control groups, that are likely unrelated to the intervention effects. We address this to the best of our ability by documentation of changes in production and prices of MNF supported businesses in addition to observing difference in the intervention and control markets, and by triangulating findings between vendor and consumer surveys. Finally, we also relied on qualitative data to explain and strengthen findings from our quantitative work. Confounding, however, remains a limitation of this work. Future endeavors should adopt longitudinal, repeated cross sectional designs. While this is extremely difficult due to the dynamic nature of businesses and the markets that they serve, future studies should also aim to identify intervention and control markets a priori.

Second, it is difficult to assess the extent to which MNF generated additional competition. This is an important potential effect of the intervention that we tried to address qualitatively; however we would have required more regular market monitoring along the life of the project to address this more fully.

It is worth noting that, overall, this work was constrained by the short timeline available for completion. Though we selected the most mature grantee in Rwanda, the young age of the program these was such that the business did not have a chance to fully implement its business plan. It would have been more appropriate to conduct a baseline for the newest grantees in Rwanda, and follow up with an endline had the protect timeline been longer. Additionally, the time allotted to develop a new research framework, received ethical approval, collect and analyze data was very challenging. Future evaluations will be conceived and included in the design stage of the project to avoid such constraints and maximize learning opportunities

6.4. Conclusions and Implications

Identifying ways in which we can measure the impact of private sector interventions to improve nutrition is a research priority as the world looks to food systems to enable improved nutrition. Taken collectively, our results can be distilled to six key learnings.

- **Financial and technical support to SMEs producing nutritious foods is an effective way to increase the production of nutritious foods.** We observed consistent improvements in the production capacity and sales of nutritious foods in the businesses studied.
- **The proximity and appearance of retail locations are important considerations in targeting low income consumers.** Translating increases in production into improvements in availability depend in part on the location and appearance of shops and these factors should be explicitly taken into consideration when working with SMEs. Proximity of location is a major driver of market choice. Qualitative data revealed that despite competitive prices at Pioneer shops and in supermarkets where Alves products are sold, the upscale appearance and location of these retail points were deterrents for lower income consumers. Positioning retail outlets in areas where low income consumers live and work, and specific messaging for low income consumers are potential strategies to consider.
- **Distribution models change as business grow, and these have different implications for reaching low income consumers.** Of the five businesses studied, all of those that began as smaller retail operations made significant moves toward selling increased production via wholesale. The implication here is not that wholesale should be discouraged but rather that it is important to

understand how businesses will scale up in order to ensure growth that is inclusive of low income consumers.

- **Financial and technical support to SMEs can reduce prices, but these lower prices do not always transmit to consumers.** Where efficiencies in production were created and the price of production was reduced, these savings were not consistently passed on to the end consumer. This was observed more so in businesses that operates on the production end of the value chain where there are middle actors in the value chain and there is less price control to the consumer. Businesses that operate at retail tended to more control over prices transmitted to consumers. Potential strategies, related to the point above, include connecting SMEs with retail markets in low income areas.
- **Seasonality plays a significant role in determining availability and affordability, and the value added of supporting SMEs may be in smoothing seasonal availability.** Seasonality emerged as a significant issue in three of the five businesses studies. While Tarakwo improved availability and affordability overall, the most significant effect was during the dry season. Pioneer's impact on both perceived availability and affordability was apparent only in the dry season.
- **The market food environment, measured at consumer, vendor and market level, is an informative way to conceptualize and measure the impacts of private sector supply chain interventions.** The measurement framework presented here, which proposes systematically applying consumer surveys, market and vendor surveys, market mapping, and qualitative interviews collectively to describe the market food environment proved to be an informative methodology to understand the contribution of MNF to nutrition. This methodology and framework can be applied to future assessments of similar interventions aiming to improve nutrition.

7. BUSINESS LEVEL ASSESSMENT

7.1. Objectives

The objectives of the work presented in this section were to:

- (i) Develop and apply a case study approach to identify successes and constraints to businesses in achieving their goals, and assess the performance of the MNF Accelerator program in terms of its relevance and effectiveness to address key barriers for businesses
- (ii) Identify the future potential and strategies for the MNF program and business models that would support further efficiencies, scale, and sustainability of reach through a cross-country review and analysis of case-studies

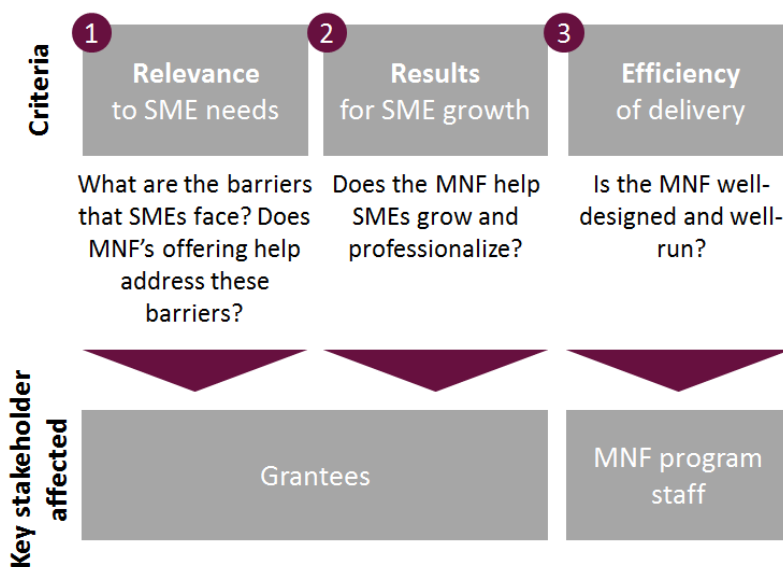
7.2. Methods

Dalberg was hired as an independent consultant to develop and conduct a case study assessment of MNF's business level impacts and to identify future potential strategies based on these findings. The organizations firm knowledge of small and medium enterprises in sub-Saharan Africa and the MNF country contexts made them well placed to lead this work.

Assessment framework

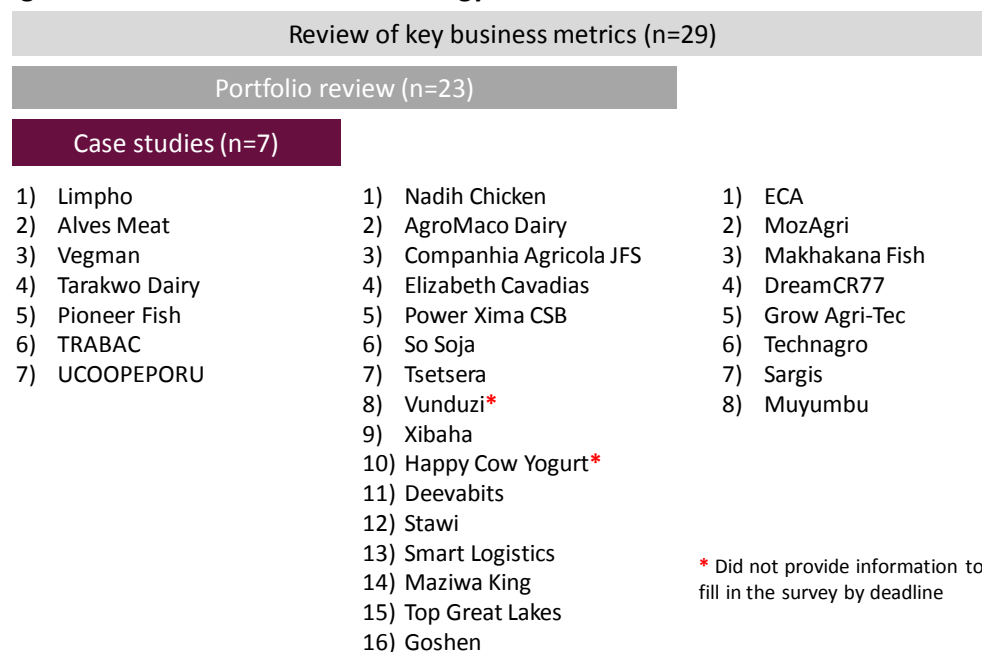
The assessment framework, pictured in Figure 9.1, is based on three criteria: relevance to SMEs' barriers to growth, progress of SMEs, efficiency of program delivery. The *relevance to SME barriers* criterion assesses how well the MNF's offerings (both financial support and technical assistance) address the barriers SMEs face to provide affordable nutritious foods. The *progress of SMEs* criterion deals with the extent to which participation in the MNF enables SMEs to grow, achieve financial sustainability and professionalize. The *efficiency of program delivery* criterion concerns how well the MNF program is designed and executed respond to SME needs.

Figure 9.1: Framework utilized for business-level assessment



To analyze the MNF program against these criteria, Dalberg employed a methodology that aimed at balancing analytical breadth and depth. This methodology centered on deep-dive case studies of seven SMEs; a light-touch portfolio review of an additional 16 SMEs; and a review of key business metrics for all SMEs within the MNF portfolio. Through this process, the assessment team spoke with 23 SMEs in total, and received quantitative information from 29 SMEs (Figure 9.2).

Figure 9.2: Data collection methodology



Sampling

A selection of businesses was identified across Rwanda, Kenya and Mozambique for the case studies and the portfolio review, to make up a sample that was representative of the diversity of businesses in the MNF portfolio. The final selection of businesses thus encompassed diversity across various dimensions: level of success obtained by the SME, type and size of support from GAIN, geographic location, length of engagement with the MNF, type of product, and food category. Prior to the start of the assessment, the assessment team worked with GAIN to develop a structured set of questions and impact indicators to be tested with each business, as well.

Data Collection

While case studies and the portfolio review investigated the same set of core questions, the process of developing the case studies also required interviews with other actors interacting with these SMEs – including, for instance, suppliers, distributors, consumers and business partners. These additional interviews enabled the team to develop a more holistic understanding of the MNF impact on grantees and on their respective value chains. Findings from in-depth case studies were then validated with the more diverse set of SMEs in the portfolio review, as well as with GAIN MNF staff and external experts. A total of 23 interviews and seven site visits with SME leadership and staff members were conducted. An additional 40+ conversations with value chain actors (e.g., suppliers, retailers / buyers, and consumers) were conducted to add depth to the case studies. All data was collected between April 20 and June 15.

In addition to the interviews with leadership and staff from 23 SMEs and relevant value chain actors, the assessment team gathered insights from four other sources:

- **Desk research:** the team reviewed key documents from GAIN, including grantee applications, proposals, and business plans; business selection guidelines; notes from MIC decision-making meetings; and field reports from past visits. The team also reviewed publicly available information, such as articles on food policy trends and SME development in each country of interest to understand the context in which each business is operating within.
- **Internal interviews:** Interviews were conducted with nine individuals comprising MNF’s leadership and staff across Mozambique, Kenya, and Rwanda. These interviews were particularly helpful for understanding the operational strengths and weaknesses of the MNF.
- **External expert interviews:** 16 interviews were held with experts who are working in the agriculture and food space across Mozambique, Kenya, and Rwanda. Some of these experts have observed or interacted with MNF in different ways (e.g., as a funder, a third-party contractor, or a peer). These interviews were particularly helpful in understanding country-specific challenges that SMEs face in each market, trends in agriculture and food consumption, the nature of local nutritional deficiencies, and the perceived impact of the MNF and other incubators / accelerators.
- **Quantitative data:** A quantitative survey was sent to all 35 businesses participating in the MNF. This allowed us to collect key performance metrics of each business before and after receiving support. The survey had a response rate of 80 percent. To complement this data, the team reviewed quarterly reports and retrospective baseline data sent in to the MNF by grantees from Mozambique.

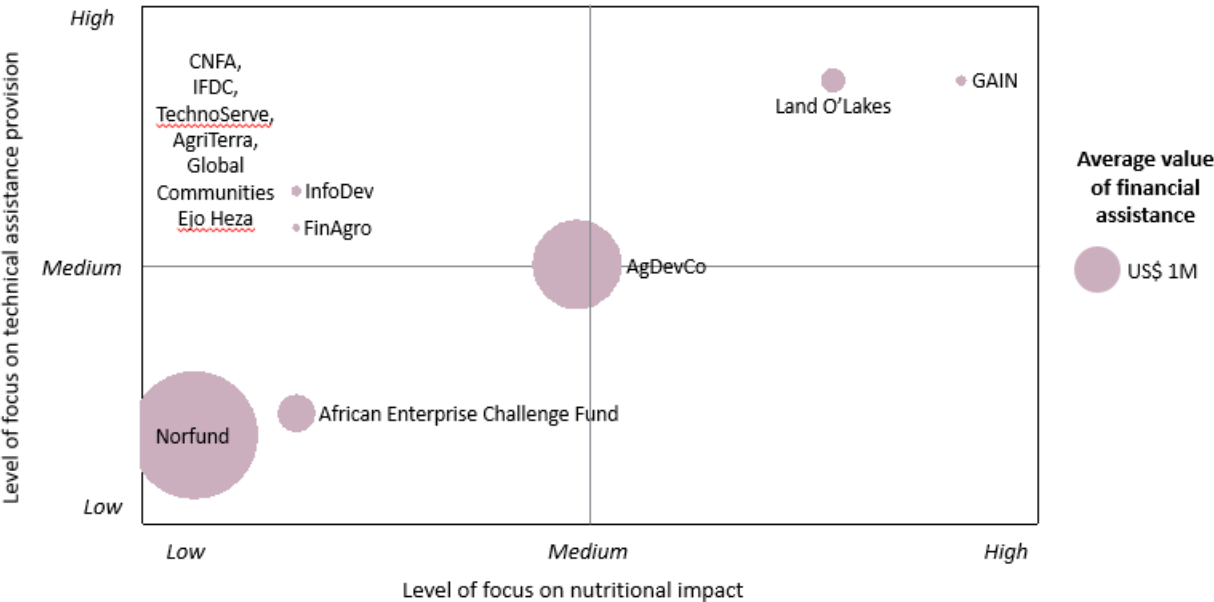
7.3. Landscape analysis

Desk research reveals little evidence that incubators or accelerators purely focused on nutritious foods were abundant in Mozambique, Kenya or Rwanda when the MNF was conceived. Rather, the focus of most accelerators was, and continues to be, improving agricultural productivity and economic growth. The Marketplace, with its focus on nutritional outcomes, filled a gap in the landscape of players in Mozambique, Kenya, and Rwanda (Figure 9.3 and Table 9.1).

Today, a significant number of agricultural and food-related accelerators are in operation in the MNF countries. The figure below depicts a sample of the various actors operating in this landscape that external experts and grantees mentioned during our interviews. As shown below, these actors differ in their levels of focus on technical assistance, nutrition impact and financial assistance. Many organizations – such as Cultivating New Frontiers in Agriculture (CNFA), International Fertilizer Development Center (IFDC), Spark and TechnoServe – provide technical assistance to agricultural and food-related SMEs without providing direct financing. By contrast, organizations like African Enterprise Challenge Fund (AECF), AgDevCo, FinAgro, GAIN, InfoDev, Land O’Lakes and Norfund offer financial assistance in the form of direct grants or investments that can vary from USD 10,000 to USD 15 million.⁴

⁴ The average grant/investment represented by the size of the bubble was calculated as the arithmetic average of the minimum and maximum grants/investments offered by these organizations to support agriculture- and food-focused SMEs.

Figure 9.3: Landscape of Actors that Provide Assistance to Agriculture- and Food-Focused SMEs



Note: In the landscape above, we considered specific programs for some of these actors – namely, the Marketplace for Nutritious Foods for GAIN, the Feed the Future (FTF) Kenya Innovation Engine for Land O’Lakes, the Agribusiness Entrepreneurship Program for InfoDev and the Cooperatives Support Program for Spark.

Table 9.1 – Types of Financial Assistance Offered by Agriculture- and Food-Focused Accelerators in Mozambique, Kenya, and Rwanda

| Program / Organization | Financial assistance |
|-------------------------------------------------|------------------------------------------------------------------------------------------------|
| African Enterprise Challenge Fund | USD 250,000 to USD 1.5 million in matching grants and interest-free loans ⁵ |
| AgDevCo | USD 250,000 to USD 10 million in long-term (5-10 years) debt and equity financing ⁶ |
| FinAgro | Over USD 3.2 million deployed in matching grants to 78 businesses ⁷ |
| GAIN / MNF | USD 75,000 to USD 120,000 in grants ⁸ |
| InfoDev / Agribusiness Entrepreneurship Program | USD 10,000 to USD 200,000 in matching grants and debt financing |
| Land O’ Lakes / FTF | USD 25,000 to USD 750,000 in grants depending on the stage of the business |

⁵ <http://reliefweb.int/sites/reliefweb.int/files/resources/agrifinalaugust20akim.pdf>

⁶ <http://www.agdevco.com/what-we-do/what-we-offer.html>

⁷ http://www.finagro.org/mz/en/home/Brochure_A4_EN.pdf

⁸ “Marketplace Detailed Activities”

Kenya Innovation Engine (from proof of concept to scale-up)⁹
Norfund **USD 5 million to USD 15 million** in long-term (5-10 years) debt and equity
financing¹⁰

Across all three countries, the MNF continues to be the only one with an explicit focus on SMEs producing nutritious foods.¹¹ As depicted above, the Feed the Future Kenya Innovation Engine, implemented by Land O'Lakes in 2012, can be considered the closest program to GAIN's MNF.¹² Both programs aim at identifying, fostering and scaling innovative, market-driven solutions that improve nutritional outcomes – but they differ in geographic reach and beneficiary type. The Land O'Lakes program operates in Kenya and invests in private sector firms, academic institutions and research institutions. The GAIN MNF program, on the other hand, is present in Kenya, Mozambique and Rwanda, and specializes exclusively in SMEs.

7.4. Discussion of Findings

This section presents the results of the assessment collectively and discusses findings relative to the four assessment criteria. In the following and final section of the report (8), we distill implications for program design that emerge from review of all results.

Key considerations

Before discussing each of the criteria in detail, it is important to note that the businesses in the portfolio cannot be judged against the same set of standards. This is the case for four main reasons, discussed below.

First, SMEs are operating on different timelines with regard to MNF support (Figure 9.4). Rwandan businesses accepted into the program under Call 2, which had its open call for applications in June and July of 2016, should not be judged against the same standards as Mozambican businesses accepted into the program under Call 1, which took place from April to June of 2013. The tenure of the businesses in the MNF program affects their ability to have utilized MNF support and the extent to which changes in production are visible. Table 9.2 summarizes the businesses supported under each call.

Second, nine SMEs that the team spoke to had not yet started producing the product aimed towards low-income communities. With these businesses, it is difficult, if not impossible, to properly assess impact right now; trying to do so would unfairly paint the portfolio in a negative light. It is, however, critical to understand why production has not started, namely for businesses from earlier calls.

Third, the changes that early-stage businesses see because of MNF support will differ significantly from those that growth-stage businesses will see. Businesses in the MNF portfolio typically fall into one of two stages of maturity: early-stage or growth-stage. Early-stage companies are those that are new to the business world, or have a product that is at a concept or pilot stage. These SMEs typically require significant hand-holding because they are still learning how to survive. Growth-stage businesses, on the other hand, are equipped with experienced leaders who have a strong sense of the market and a path to scale in mind. These companies often

⁹ <https://kfile-production.s3.amazonaws.com/site/None/download/innovation-engine-acknowledgement.pdf>

¹⁰ <https://www.norfund.no/food-and-agribusiness/category1051.html>

¹¹ CNFA, TechnoServe, IFDC and the Africa Enterprise Challenge Fund operate in all three countries, but do not have an explicit focus on SMEs producing nutritious foods: Global Communities Ejo Heza and AgriTerra operate in Kenya; FinAgro operates in Mozambique; Spark operates in Rwanda; InfoDev operates in Mozambique and Kenya; AgDevCo operates in Mozambique and Rwanda; Norfund accepts applications from all three countries of interest but does not currently have active agribusiness investments in any of them.

¹² <https://www.landolakes.org/getattachment/Resources/Publications/Feed-the-Future-Kenya-Innovation-Engine-Fact-Sheet/Feed-the-Future-Kenya-Innovation-Engine-Fact-Sheet.pdf>

required specialized TA in a specific area, and/or a capital infusion to ease bottlenecks to growth. It was quickly realized that growth-stage SMEs were able to use support from MNF to accelerate their businesses towards the vision that they already had in mind, while early stage SMEs required more assistance in figuring out what that vision should be. As a result, it is important to use different standards of success when discussing how early-stage SMEs have progressed vs. growth-stage SMEs.

Finally, country context of the MNF program varies widely, and findings differ across countries as a result of this. Part of this is because the Marketplace began at different times in each country (2013 for Mozambique and Kenya, and 2015 for Rwanda), as discussed above. With each open call, the MNF has continued to learn about what works and what does not, allowing it to improve the program offering and delivery as time passes. Outside of this, businesses in Mozambique, Kenya, and Rwanda face different political and economic contexts that affect their ability to succeed. The results section highlights where findings differed significantly due to country context.

Figure 9.4 – Timeline of MNF Calls

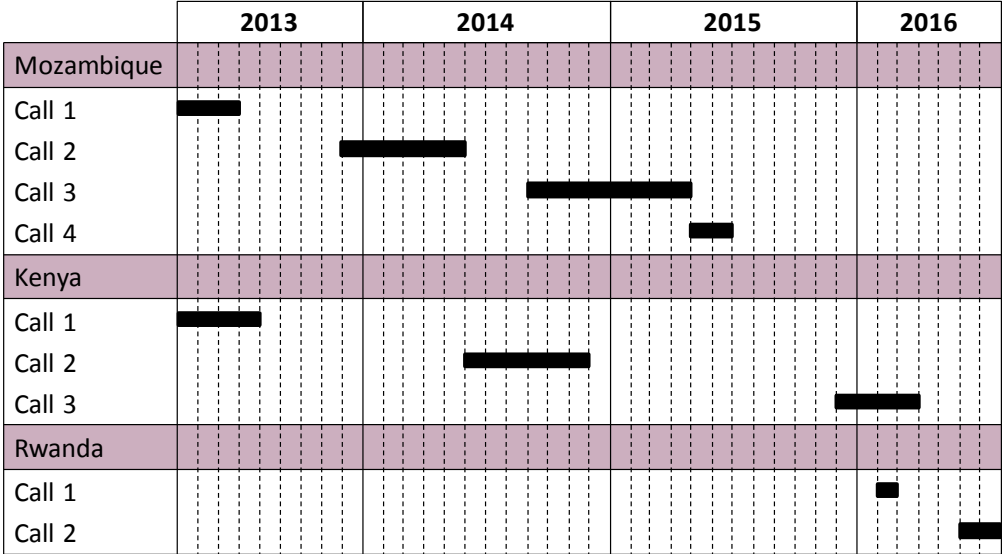


Table 9.2 – Businesses Funded under each call

| | Mozambique | Kenya | Rwanda |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Call 1 | <ul style="list-style-type: none"> • Empresa Agricola JFS* • SoSoja Yogurt* • Vegman* • Vunduzi Fish* | <ul style="list-style-type: none"> • Chicken Choice • Maziwa King* • Pioneer Fish* | <ul style="list-style-type: none"> • Dream Sausage • Goshen Pork Sausage* • Top Great Lakes* • TRABAC* • UCOOPEPORU* |
| Call 2 | <ul style="list-style-type: none"> • AgroMaco Dairy* • Alves Meat* • Joao Iodized Salt • Limpho* • MozAgri • Xibaha* | <ul style="list-style-type: none"> • Happy Cow Yogurt* • Tarakwo Dairies* | <ul style="list-style-type: none"> • Grow Agri-Tec • Technagro • Irisa • Sagris • Muyumbu |
| Call 3 | <ul style="list-style-type: none"> • Makhakana Fish • Power Xima CSB* • Tsetsera Pork* | <ul style="list-style-type: none"> • Classic Foods • Deevabits* • Smart Logistics* • Soy Afric • Stawi* | |
| Call 4 | <ul style="list-style-type: none"> • Elizabeth Cavadias* • NADIH Chicken* | | |

*Businesses interviewed as part of the assessment

7.4.1. RELEVANCE TO SME BARRIERS

7.4.1.1. Barriers to SME success

While SMEs in the MNF portfolio are diverse in many ways, they often face common challenges when attempting to scale their businesses. Some of the main challenges that SMEs shared are summarized in the Table 9.3, and separated based on whether they are a focus of MNF support.

Table 9.3: Barriers to SME Success

| Barriers eased by MNF support | Barriers (mostly) unaddressed by MNF support |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Lack of access to finance: lack of access to finance, both for working capital and for larger investments, was one of the most common barriers to success that grantees named. This was of importance in Mozambique, where interest rates climb as high as 30 to 35 percent, but was also a major issue in Rwanda and Kenya, where interest rates are lower (15 to 20 percent in Rwanda; 10 to 23 percent in Kenya, with the lower rates coming from rural banks) but collateral requirements make borrowing from banks | <ul style="list-style-type: none"> • Limited access to inputs: many grantees are forced to face long delays in accessing inputs (feed, livestock, etc.), which can have negative implications for their production capabilities. Access to water and electricity, which are often needed in food production endeavors, is also a recurring problem. • Limited distribution and marketing capabilities: SMEs often lack linkages to distributors as well as the know-how to market their products to different consumer |

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>too risky for small businesses.</p> <ul style="list-style-type: none"> • Limited managerial skills and business acumen: this was mainly an issue for newer SMEs whose owners did not have a business background (e.g., TRABAC in Rwanda, Deevabits in Kenya, and Limpho in Mozambique). Program staff in Mozambique mentioned that this barrier becomes apparent when they see grantees “signing contracts without understanding them or without engaging in any negotiation.” Keeping track of basic metrics is a challenge, as well, as there is not a culture of record-keeping. • Limited technical expertise: SMEs often lack knowledge around food safety and quality control. This is a core competency for GAIN, | <p>segments. This is particularly relevant for SMEs that are expanding to a new segment (such as low-income consumers).</p> <ul style="list-style-type: none"> • Inhospitable environment for doing business: SMEs in Mozambique in particular named several external factors that contribute to a generally hostile environment for doing business, including: political instability, currency fluctuations, and corruption. Mozambique has a ranking of 137 on the World Bank’s Ease of Doing Business ranking (out of 190 countries). Rwanda and Kenya, score better, with scores of 56 and 92, respectively; however, they face many of the same challenges, albeit to a lesser degree. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

7.4.1.2. Relevance of business planning

Business planning assistance, as it is currently conducted, has mixed reviews; on one side, 11 out of 23 grantees indicated that it was either not useful or actively frustrating, while the remaining half reported that it was useful. Eight of the grantees that indicated that business planning was not useful were located in Mozambique. The more mature grantees felt that they didn’t need the business plan, as they already had one developed on their own and found less value in completing them. Further, locating quality third-party consultants is a major challenge in Mozambique, compared to Kenya and Rwanda, and low-quality consultants, along with long timelines, seem to be the main cause of frustration with business planning.

In Kenya, grantees report that the business planning process has evolved and improved over the years, as evidenced by the fact that feedback from later grantees was more positive. One recent grantee shared “the business plan taught us how to develop a strategy, structure our plans for the next five years. The market research was also an eye-opener.” Recent grantees also praised the third-party consultant selection process, as they have an active role in choosing which consultant to go with. Grantees from the first call, such as Pioneer and Maziwa King, felt they had less agency in the consultant selection process and as a result had greater difficulty working with consultants. Both of these grantees also mentioned that the protracted length of the business planning process meant that their key challenges had already changed by the time they got the grant, making it less useful overall.

Rwandan SMEs largely praised the business planning process. TRABAC shared that the business plan helped them learn how to work and plan purchases of inputs in a standardized way, while Goshen Pork felt that the business plan helped the company think about the importance of market analysis, understanding its strengths

and weaknesses, and develop a vision. At the same time, program staff in Rwanda felt that consultants were doing all the majority of the thinking on the business plans, and suspected that because it was in English the businesses will not refer back to it afterwards.

Across the board, business plans are extremely lengthy documents, which reduces their ability to communicate the value of the business externally. Business plans written for grantees are extremely dense and detailed documents, and there is little evidence that the resources that go into producing the business plan are translating into long-term results for the SME. There is no version of the business plan that is digestible for an external audience of investors, potential partners, or banks. Since part of the goal of the MNF is to increase SMEs' chances of raising money in the future, creating a concise version of the business plan that can facilitate this is critical.

7.4.1.3. Relevance of technical assistance

In Mozambique and Kenya, TA offerings are largely driven by SMEs rather than by GAIN, although GAIN does provide suggestions; the opposite is true in Rwanda. Mozambican and Kenyan grantees typically requested certain types of TA, although the program also provides suggestions for technical assistance that might be relevant. In Rwanda, the grantees indicated that the program guided them towards certain types of technical assistance based on a review of their business. Rwandan SMEs required significant direction from third party consultants, suggesting they lacked clarity about their own needs. In addition, Rwandan grantees indicated that the third-party consultants would often be directive in their advice. While this is not intrinsically negative, it could indicate that the SMEs selected in Rwanda lacked clarity around how to unlock their own growth.

Basic training in business and managerial skills is particularly relevant for grantees new to the business world, while specialized assistance (e.g., nutrition-focused TA on food quality and safety) was relevant across the board. While basic training on how to run a business is provided by many accelerators, it is still a vital part of the MNF offering. Without basic business skills that allow an SME to keep track of its accounts, fulfill regulatory requirements, etc., more specialized TA around hygiene, food safety, and value addition in food processing would be a lost investment. Early-stage SMEs across all three countries noted the importance of this basic support. Specialized assistance around nutrition-related topics like food safety, value addition, and hygienic production, was relevant to companies across the board, given that this is an area of knowledge that is still growing in these countries.

Group trainings have mixed results, while customized technical assistance was more valuable across the board. Group trainings were trainings that were delivered to grantees in small groups (not to be confused with Community of Practice meetings, which were more about networking and keeping up to date on key trends). AgroMaco Dairy in Mozambique shared that some of the group trainings were “repetitive, and could be okay only for people without many skills. The trainings don't feel tailored – the instructors don't take into account how hard it is to operate here.” However, other grantees shared a more positive impression of the group trainings. For example, TRABAC mentioned “before the grant, they [GAIN] would have us meet together and we would get trained on a specific subject, for example, product development. Those things that we learned together actually were most useful for the business.”

One missing piece of informal TA that grantees seem to have appetite for is a platform through which to connect with other grantees that are facing similar challenges. At least seven grantees mentioned that an

alumni network or grantee knowledge-sharing mechanism would be helpful resources. Most of these grantees were early-stage grantees; mature companies tended to be less interested in connecting with other grantees, saying that they wanted to focus on sales and that the challenges they faced were wildly different than what new companies were facing.

7.4.1.4. Relevance of financial support

The financial component of MNF support is extremely relevant to SMEs needs across all three countries given the common challenge of poor access to finance, and especially relevant to SMEs facing production capacity constraints. While a very small number of new SMEs said that they would have been interested in the technical assistance provided by the MNF even without the benefit of a grant, the majority of grantees said that the financial aspect of the support was the most valuable part of it. Newer businesses in particular either did not feel ready to take on debt (e.g., Goshen Pork in Rwanda) or were being rejected by banks when applying for loans (e.g., Smart Logistics in Kenya). More mature companies that already had key skills in-house along with a clear vision for their business and did not require as much technical assistance, were especially appreciative of the grant, as it helped them get past a key bottleneck to growth; such companies include Vegman and Alves Meat in Mozambique. SMEs whose bottlenecks were related to production found the grant support particularly relevant for their needs, as they could utilize the grant to quickly ramp up and meet previously unmet demand. It is important to note that the grant size (typically USD 75,000 to 120,000) limits MNF's relevance to SMEs of a certain size – ones that are large enough to absorb the funds, but small enough that the investment makes a real difference.

Further, compared to other accelerators, GAIN allows SME management to take the lead in fund use decisions. Mozambican and Kenyan grantees indicated that they felt that the program team truly listened to what they said they needed, saying that they “did not try, as many donors and NGOs do, to influence what *should* be done. They simply asked us what our plans were and indicated what they were willing to fund vs not.” This approach ensures that the financial support is as relevant as possible for the SMEs without compromising on the MNF's values.

On the other hand, because financial support is so heavily focused on expansion of production capacity, it is not always relevant for businesses that are facing a different type of challenge. For example, Limpho received funds to purchase of machinery to increase production capacity for peanut butter, but an interview with the SME owner suggested that the company's primary challenge is to build a market for the product. In this case, one could argue that the offering was relevant to some degree, but that directing more focus to building demand would have led to a more transformational impact for Limpho. For other SMEs that are facing non-production related constraints (e.g., poor access to inputs – UCOOPEPORU in Rwanda, lack of demand – Goshen Pork in Rwanda), the grants are still useful, but not as relevant to their biggest barriers.

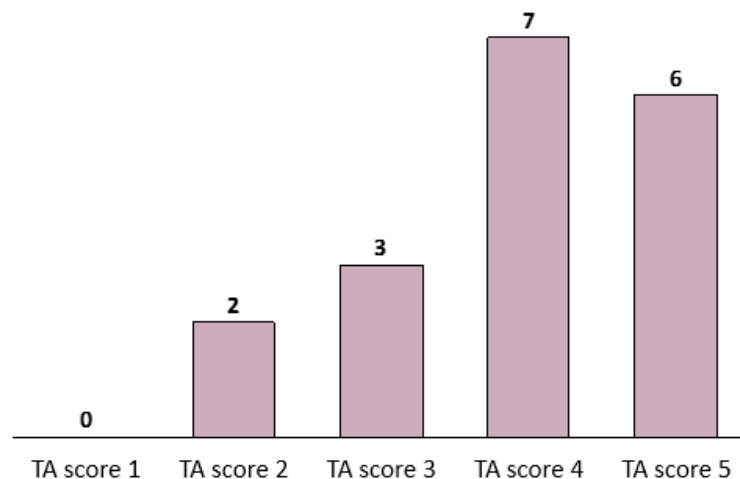
Lastly, incomplete analysis of risks that each SME faces during the selection process can reduce how catalytic a financial investment can be. In the case of UCOOPEPORU in Rwanda, for instance, inadequate planning on the part of the business led to operational costs becoming the major bottleneck to their expansion after purchasing equipment with the MNF grant. UCOOPEPORU's problems with fingerling supply seem to have occurred after winning the grant. However, it is unclear whether UCOOPEPORU or the third-party consultants had devised any strategic or financial plans on how to gain access to fingerlings in case their original supply was interrupted. Another example of this is the MNF's funding of SoSoja in Mozambique, a company that already had a loan from AgDevCo that they were unable to pay back.

7.4.2. PROGRESS OF SMES

Across, the board, businesses have the ability to produce more nutritious food due to MNF support expanding their production capacity, although all businesses may not be able to maximize production due to other challenges. Automation of production processes and the resulting increase in production capacity is the biggest bottleneck solved by MNF grants. For businesses that required additional production capacity to meet unmet demand, participation in MNF has certainly led to growth. However, businesses facing other problems (e.g., lack of working capital, challenges at other points in the value chain) will face greater difficulties in actually making use of this increase in production capacity.

Almost all SMEs that received technical assistance said that it has helped them to professionalize their business and/or improve the quality and safety of their product. The figure below shows business' scoring of the utility of TA. (Figure 9.4)

Figure 9.4: Grantee rating of how useful technical assistance is for their business (5=very useful; 1=not useful at all)



Note: One grantee scored the technical assistance received as “4.5”, which was counted under “TA score 4” in the histogram above. Another scored it as “2.5”, which counted under “TA score 2” in the histogram above.

Several businesses, namely in Kenya and Rwanda, were able to share details on how they had integrated learnings from technical assistance into their business. Mozambican grantees mentioned that technical assistance was useful, but had fewer clear examples of how learnings had been integrated into everyday policies and practices of their SME.

In Rwanda, participation in the MNF has led to greater levels of professionalization for the SMEs interviewed – particularly around managerial skills, food safety and hygiene. As a result of the MNF training, SME owners are now using specialized accounting software to record sales, prices and volumes, whereas previously they were not systematically recording this data. Top Great Lakes has also benefitted from technical advice on how to increase the shelf life of its product by using vacuum packaging. On the quality side, the training that Goshen received from the MNF helped him understand national regulations around meat production (which he had no knowledge of before) and ensure that his production line was compliant.

In Kenya, Tarakwo Dairy shared that they now had policies in place to guide financial management of the company, thanks to technical assistance from the MNF, which made it easier to report out on key metrics.

Happy Cow Yogurt, a relatively older company, benefited greatly from assistance focused on product development of a fortified yogurt product, Yogies, which will be in stores next month.

Businesses indicated that their progress towards scale had been accelerated by several years because of support from MNF. Virtually all of the businesses indicated that support from MNF had allowed them to accelerate their position on the path to scale by at least two years (e.g., Tarakwo in Kenya), and in some cases, up to 10 years (Elizabeth Cavadias in Mozambique). Goshen Pork in Rwanda shared that they would not have entered a new product line at all without the MNF, while Smart Logistics said that “without the grant, we would not have seen the light of day; we had no capacity and no financial institution was ready to support us.” Many of the growth-stage businesses – such as Alves Meat and Vegman Koben in Mozambique and Happy Cow in Kenya – already had an idea of what they wanted to do in the future, and the MNF support made it possible to achieve that vision much sooner than expected (e.g., three years in the case of Alves, eight years for Vegman, and one year for Happy Cow).

Grantees indicated that while they felt more confident about acquiring financing in the future because of the MNF grant, it would be helpful to be actively connected with grantees that are exiting the program with sources of finance. Several grantees discussed the positive effects that the grant was having on their ability to raise funds. In Kenya, Deevabits shared that “investors are gaining confidence in us because they see that someone else supported us. The grant helps show that we are serious, and the business planning helped us become more investor-ready – we’re optimistic we can raise money.” Smart Logistics highlighted a similar sentiment, saying that “the grant is proof that the product works; now, I have banks coming to me. Before GAIN, I always got turned down.” While optimism is running high with some of these grantees, others shared that MNF playing a more active role in connecting grantees with potential financiers would be a helpful next step. Stawi’s founder said that “active matchmaking [with funders] could be really helpful. I would love to be introduced to Danone, Cargill, or other potential partners and investors.”

One potential negative effect of MNF support on SMEs centers on the possibility that providing grants can actually foster dependency – and expectations of ongoing support – rather than empower SMEs to raise money on their own. Some of the grantees we spoke to indicated that it would be helpful if MNF could assist them with operational costs. This hope that the Innovation Accelerator could help fund working capital demonstrates that at least some of the grantees did not experience the desired step-change in their path to scale or their level of professionalization because of MNF support. External experts also noted this phenomenon, particularly in Mozambique, where a number of accelerator programs exist. One expert noted that “people here are used to grants...there’s something addictive about it. Some businesses in the [Chimoio] market *survive* on grants...they get them from everyone - GAIN, USAID, the World Bank. Before giving a grant, donors should really ask themselves: how can you give money in a way that actually moves a business forward?”

Business performance before and after the GAIN MNF grant

A survey addressing how key metrics have changed from before SMEs received a grant to afterwards was sent out to all grantees. Out of 35 businesses that received the survey, 29 either filled out the survey themselves or sent us relevant data pertaining to the survey topics. Over a two-week period, the GAIN country teams and Dalberg worked together to follow up with businesses that had not properly filled out the survey.

Before discussing the results of the analysis, two caveats are in order. First, 10 out of these 29 businesses had not yet started producing the nutritious food supported at the time they filled out the survey. Out of the 18

businesses that had started production, 13 properly and completely filled out the survey – these were the businesses whose data was utilized for the analysis on production volume, revenues, profits, prices and headcount.¹³ This final sample of SMEs with full data was composed of four Mozambican businesses, six Kenyan businesses and three Rwandan ones. Hence, the results obtained are slightly more biased towards the performance of Kenyan SMEs. Second, many SMEs did not have a practice of recordkeeping before receiving training from MNF and therefore may not have accurate retrospective data.

Delays in the production timeline of the MNF grantees were mainly due to setbacks with the delivery of supplies and/or machinery. Top Great Lakes and JFS, for instance, were both waiting to receive packaging equipment to start production. Similarly, Power Xima and AgroMaco were still in the process of setting up the machinery and testing it but should begin production in the next few months. SoSoja is the main exception, with its delays caused by financial issues that forced the factory to halt production for the time being. According to the SoSoja managing director, however, he is renegotiating SoSoja's debt with AgDevCo and should reopen the factory soon.

Production volume and revenues had impressive spikes just three months after businesses received the grant. On average, businesses increased production volume of their top-selling product supported by the grant by an average of 91 percent.¹⁴ In line with this production capacity expansion, SMEs reported an increase in monthly revenues by 99 percent – hence nearly doubling their revenues within a short three-month period after receiving the grant. That the volume of MNF-supported nutritious foods reaching the markets in Mozambique, Rwanda and Kenya nearly doubled within only a quarter is perhaps the most significant result of the program (Figures 9.5 and 9.6).

In this same period, the price point for the top-selling products supported by the GAIN grant increased by an average of five percent. At least two different factors can explain this price increase. First, it could be a temporary reflection of the sizeable investments many of these businesses made in the form of co-investments with the MNF program in order to increase production capacity. Second, our interviews suggest that many Mozambican grantees saw an increase in their production costs due to the economic crisis that followed the 2013-2014 armed conflict. The economic crisis and ensuing exchange rate fluctuations were especially damaging to businesses that depended on imported supplies.

The monthly operating profit margin of MNF grantees increased by an average of four percentage points within three months of receiving the grant. Mozambican SMEs registered an increase of only one percentage point, whereas Kenyan and Rwandan grantees had a five-percentage point increase in operating profit margins. This is consistent with the earlier observation that price increases in Mozambique are more likely to have been caused by cost increases than by profit increases. It is also worth mentioning that, in general, MNF grantees had a wide range of operating profit margins – including all businesses that filled out the survey, regardless of the production status of the nutritious food supported by GAIN, the minimum operating profit margin reported was five percent (DREAMCR77, before receiving the grant) and the highest was 89 percent (Top Great Lakes, three months after receiving the grant).

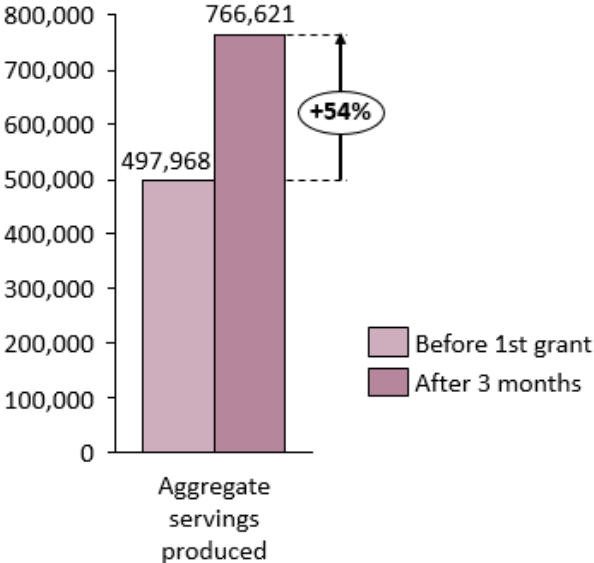
¹³ A few businesses filled out parts of the survey (e.g. number of female employees, but not production volume) but not the entire survey; they were included in specific analyses whenever possible.

¹⁴ Although Alves Meat did not fill out the survey, our team retrieved production volume data about the business from the Grantee Baseline spreadsheet and from the Quarterly Reports.

Within the first three months of receiving the MNF grant, 50 percent of SMEs increased their employee headcount. On average, MNF grantees increased headcount by two workers – and the average change in the number of female employees was of 0.72. This suggests that the MNF program had spillover effects beyond the SME customers, leading to a modest increase in employment opportunities in the region for both women and men, albeit not equally.

Finally, 50 percent of SMEs also saw an increase in the number of retail stores they owned or sold products to. The average change in the number of retail stores for these SMEs was 6.21 – a number, however, that is heavily skewed by Stawi reporting an increase in retail stores from 150 to 220. When this outlier is left outside the calculations, the average increase in the number of retail stores becomes 1.31. Similar to the case of headcount changes, this is a modest increase; however, it must be noted that both hiring employees and opening new stores / signing deals with stores can be relatively long and cumbersome processes depending on the level of formalization of a company.

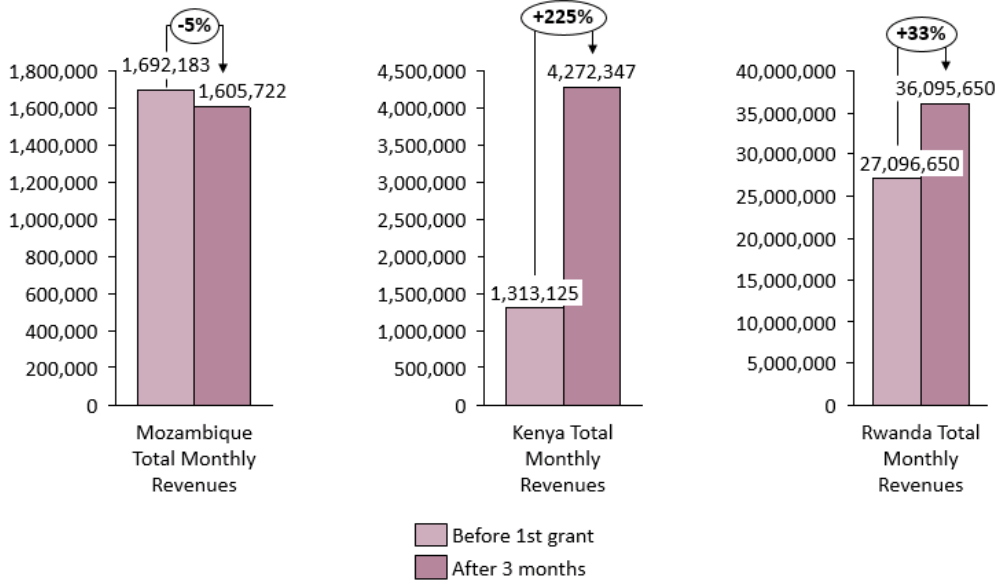
Figure 9.5: Total Servings Produced by MNF grantees before and 3 months after receipt of first grant



Note: Based on availability, we utilized data from the following businesses: Deevabits, Maziwa King, Smart Logistics, Stawi, Tarakwo Dairies, Elizabeth Cavadias, Limpho, Moz-Agri, NADIH, DREAMCR77, Grow Agri-Tec, and TRABAC.¹⁵ The largest monthly servings produced increase observed for this 3-month period was 297 percent (Tarakwo Dairies), and the lowest was an 88 percent decrease (Elizabeth Cavadias).

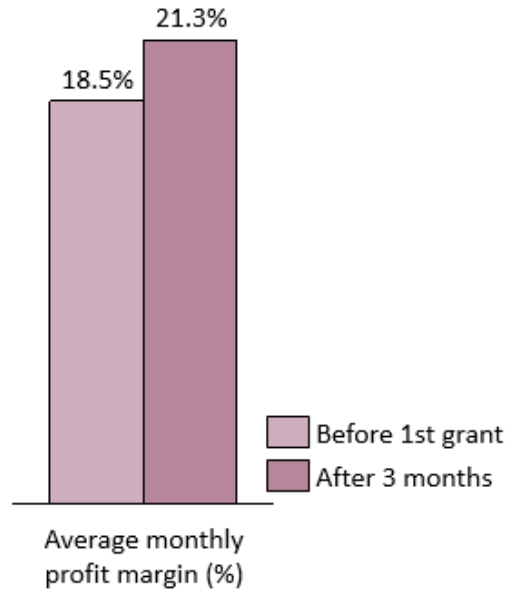
¹⁵ For products that did not have serving sizes previously stipulated by GAIN, the following assumptions were made: 65g for rabbit meat, 250mL for fresh pasteurized milk and 1 unit for eggs.

Figure 1.6 – Average Monthly Profit Margin (%)



Note: Based on availability, we utilized data from the following businesses: Deevabits, Maziwa King, Smart Logistics, Stawi, Tarakwo Dairies, Elizabeth Cavadias, Limpho, Moz-Agri, NADIH, DREAMCR77, Grow Agri-Tec, Sargis, and TRABAC. The largest monthly profit margin increase observed for this 3-month period was 15 percentage points (Sargis) and the lowest was a decrease by eight percentage points (Elizabeth Cavadias).

Figure 9.6 – Grantee rating of how useful technical assistance is for their business (5=very useful; 1=not useful at all)



Note: Based on availability, we utilized data from the following businesses: Deevabits, Maziwa King, Smart Logistics, Tarakwo Dairies, Elizabeth Cavadias, Limpho, Moz-Agri, NADIH, DREAMCR77, Grow Agri-Tec, Sargis, TRABAC.¹⁶ The largest monthly revenue increase observed for this 3-month period was 746 percent (Smart Logistics), and the lowest was a 56 percent decrease (NADIH).

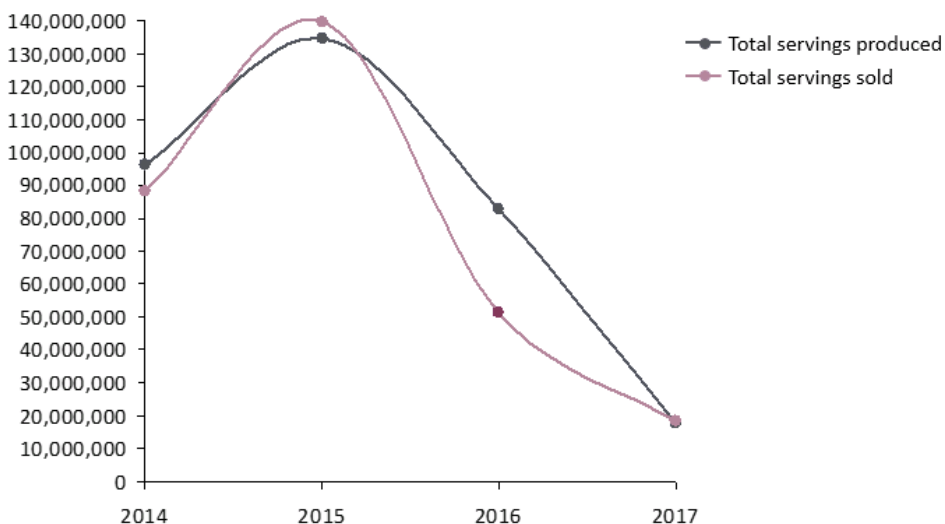
¹⁶ Figure 8 does not include Stawi because the SME appears to have provided yearly revenues, rather than monthly revenues. This heavily skewed the bar chart for Kenya, as the numbers Stawi reported were often 10 times larger than those of other SMEs.

The case of Mozambique: economic effects of the 2013 armed conflict

Using retrospective baseline data available in Mozambique, an additional analysis on the impact of the program in the country was conducted to explore the effect of the intervention in light of the economic crisis. This dataset contains yearly data on servings produced, servings sold and revenues for 14 Mozambican grantees – and thus allows us for more in-depth understanding of how the political and economic instability in the country may have affected the performance of the SMEs there. In turn, such an understanding may enable us to gauge the extent to which the special circumstances in Mozambique may have influenced the aggregate metrics for all three countries.

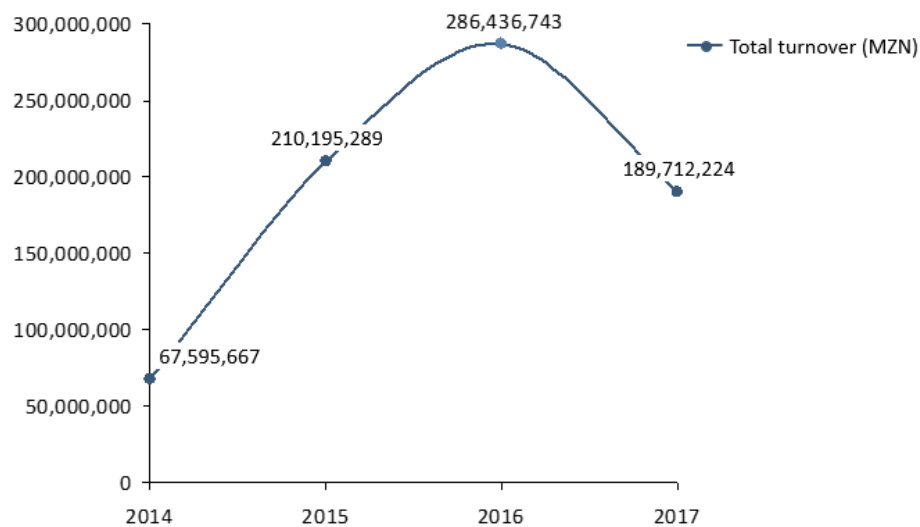
Between 2014 and 2015, total production volume increased by an average of 116 percent for all grantees. By contrast, between 2015 and 2016, total production volume decreased by an average of 84 percent (Figure 9.7). Between 2014 and 2015, total revenues for all grantees increased by an average of 211 percent. By contrast, average revenue increases between 2015 and 2016 were only 36 percent (Figure 9.8). It is still noticeable, however, that revenues increased despite the drastic production decrease in the same period.

Figure 9.7: Total Servings Produced and Total Servings Sold (2014-2017 Forecast) for Mozambique Grantees



The graph above, Figure 9.8, depicts the variation in servings produced by the SMEs in Mozambique. Between 2014 and 2015, average servings production increased by around 30 percent – from under 100,000 servings to over 130,000 – thus suggesting that the MNF was successful in increasing the production capacity of these businesses. Anecdotal evidence from interviews pointed out that the dramatic drop in servings produced and sold after 2015 can be largely attributed to the economic crisis in the country. The difference between servings produced and servings sold appears to be at its peak in 2016, shortly after the grantees upgrading their equipment and machinery. Drawing from interviews with grantees in Mozambique, it seems that a large portion of the businesses were producing foods that weren't considered *essential* by consumers. It is thus unsurprising that the crisis would have had a large effect on consumers' willingness to pay for these products and would give rise to the production surplus observed in the graph.

Figure 9.8: Total Turnover (2014-2017 Forecast) for Mozambique Grantees



The total turnover for the Mozambique grantees has grown sharply between 2014 and 2016 – on average, the total revenues for the SMEs quadrupled over this period. The fact that revenues are at their highest in 2016 may appear surprising vis-à-vis the earlier finding that total servings sold were lower in 2016 than in 2014. This, however, could be due to businesses marketing some of their products at higher prices once the crisis started. Interviews with grantees support this hypothesis, as most of them mentioned an increase in their production costs due to increases in supply prices – and these increased costs would, in turn, be translated into higher prices for final consumers as was the case more broadly among Mozambican SMEs experiencing the economic crisis.

7.4.2.1. Efficiency of systems and procedures

Grantees across countries typically understand the need for reporting and it does not seem to be a major burden for them. However, improvements to the process can be made to enrich program knowledge.

Grantees had few complaints about the current quarterly reporting process, saying that forms only took a couple hours to fill out at the most, or even quicker than that, depending on the organization level of the grantee. However, the reporting process represents an opportunity for the program to gather key metrics such as sales, expenses, consumer feedback that are currently not tracked. Further, more powerful tools than those currently used (Word and PDF documents) can be used to more easily track the progress of each SME.

Selection and business planning are excessively lengthy. The Rwanda program team mentioned that perhaps there could be more efficient ways of identifying suitable SMEs for the program, as that entire process took many months. In the first call in Rwanda, for instance, the call for proposals was launched in January and grants were only awarded in September. Grantees in other countries concur, with Deevabits in Kenya sharing that “a long time elapsed between application submission and learning I was accepted for business planning support. I think selection can be done in a shorter time.” A shorter timeline to disbursement will also ensure that SME needs do not drastically change between application and fund disbursement, which has been an issue in the past (e.g., with Pioneer in Kenya, by the time their application was accepted, the government program that provided subsidized fingerlings – a key input for production– had ended.)

8. IMPLICATIONS OF OVERALL FINDINGS FOR DESIGN

- 1) In line with our objectives, this section is dedicated to identifying and discussing the future potential and strategies for the MNF program emerging from a review of all findings presented above. We discuss six high-level implications of this work for the design of interventions providing support to SMEs with the aim of improving nutrition that can be applied to future iterations of MNF or other projects.
- 2) **Consider the full value chain when selecting grantees and designing assistance for grantees.** For investments in SMEs to have an impact on consumer-level access, businesses must have reliable access to inputs and stable distribution channels, as was highlighted in both the market and businesses level studies. This can be achieved by (i) focusing on a smaller number of larger, more established businesses or (ii) focusing in a smaller number of value chains and working throughout the entire value chain.
 - a) In contexts where value chains are highly developed and there is significant development of the private sector, it may be most impactful to work with fewer, more advanced businesses. Investments in this context have the potential to create efficiencies that transfer down the value chain and to the consumer. The focus on medium scale enterprises would limit the effort of providing basic management services, and the number of grants disbursed. This is likely more feasible in Kenya, where there is more variability in SME size.
 - b) In contexts where the private sector is less developed and there are fewer SMEs, it may be most impactful to work all along the value chain and take on more of an incubation role. This can ensure that gains to a specific business are not limited by underdeveloped or unreliable supply or distribution channels that limit gains to consumers. Such investments would also have greater potential for 'ecosystem effects,' as they could encourage multiple players to enter the sector. This is likely more suitable to a context like Rwanda, where the private sector for food is less developed and there are fewer SMEs responding to calls.
- 3) **Partner with other organizations to provide a full suite of services to SMEs and focus GAIN technical assistance efforts on nutrition and food safety.** As the assessment revealed, small and medium enterprises have different needs. Smaller enterprises require more business development services and technical assistance, than their medium counterparts but managing the many third-party consultants needed to provide that broad-based and diverse support is highly demanding. The extent to which such specialization is feasible will depend on the opportunities to link to other organizations/ groups providing the other types of TA needed. Several alternatives exist to do so including, establishing formal partnerships with (i) local financial institutions that can better manage the paperwork and due diligence processes that come with giving grants and (ii) other accelerators that specialize in different areas of technical assistance.
- 4) **Reduce the pull of free money by creating greater buy-in and commitment from business.** While providing grants to SMEs is a critical element of the MNF model, it also has the potential risk of creating dependence on grant funding, or worse, encourage businesses to absorb more than they can handle at their current stage, simply because the funds are available. To ensure that these risks are mitigated, it is worth considering strategies to reduce the pull of free money. Potential strategies include (i) simple or tiered co-investment, where the first payment in a grant and the second is conditional on co-investment, (ii) zero interest loans or (iii) delivery of an independent investment pitch after business planning has been completed.

- 5) **Distribution channels require support to ensure that market growth is inclusive of regions serving low income consumers.** The extent to which lower prices and increased production translate to improved affordability and availability among low income consumers is a function in part of retail locations and the distribution models that reach them. The following strategies can be considered in the design of the intervention.
- a) Working specifically with SMEs that have a retail level, where price control is greater, and reductions in production costs are likely to benefit consumers is one avenue.
 - b) Connecting SMEs without direct retail locations to networks in low income communities, in addition to any other distribution networks is a second avenue. Pioneer and Alves are good examples of this.
 - c) Providing support to tailor marketing specifically for low income consumers groups to make retail locations inviting in addition to accessible.
- 6) **Ensure business readiness or clear pathway to readiness but minimize length of time between application submission and disbursement.** Some MNF grantees did not receive financial assistance until a year after their application was submitted. By this point, many of them had experienced significant changes, either internally or externally, that made their original application less relevant. Keeping application processes short, and business plans flexible, would make this less likely. While there are many necessary, time-consuming parts of the process (e.g., site visits) creating efficiencies in the process wherever possible is key. The most important strategy noted here, that should be considered by other accelerators, is to separate the due diligence and business planning processes such that only funded businesses receive full business plans. Consultants can be hired to run important diagnostics to select businesses, and separately, more business plans can be developed.

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