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SUMMARY REPORT

Marketplace for Nutritious Foods Program
A Pilot Case Study Evaluation of a Nutritious Food
Business in Kenya

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1. EXECUTIVE SUMMARY

Introduction

Under GAIN's Agriculture for Nutrition Global Program and with support from USAID, the Marketplace for Nutritious Foods (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. This is a case study assessment of Chicken Choice (CC), a poultry production and retail business supported by MNF since 2013. CC offers small chicken cuts at competitive price points with the aim of making chicken available to lower income groups.

Objectives

The purpose of the assessment was to (i) determine the impact of investments on the availability and affordability of chicken products (ii) assess project reach and (iii) the experiences of businesses in implementing technical support provided by MNF.

Methods

The case study included both a consumer-based survey and qualitative interviews of business and MNF staff. Seven of 14 CC outlets operating at the time were purposively sampled. Four hundred and thirty six consumers were then sampled from CC outlets (n=153), competitor outlets (n=132), and random shoppers (n=151) in the market vicinity. This allowed for comparison of income levels, perceptions of affordability, and purchasing habits across groups. In-depth interviews were conducted with three GAIN staff, four CC management and staff, 10 stockists, seven CC outlet staff and six competitor outlet staff. Observations of 14 outlets and one production and processing unit were also undertaken.

Results

Respondents of the consumer based survey were similar across all demographic measures with the exception of occupation. The convenience of outlet location emerged as an important factor affecting outlet choice and frequency of chicken purchase for both CC and competitor shoppers. Cost and quality were also frequently reported as factors affecting choice. CC consumer purchased on average 1.76kgs of chicken per visit, and purchased chicken on average five times a month. These values were significantly higher than the equivalent values for random shoppers but not shoppers of competitor outlets. CC pricing was competitive across all chicken parts, and meat pieces were deemed more affordable than whole chickens by all consumers. CC is estimated to have reached an average of 1,237 households per month of which over a third are low income. With regards to business operations, the main challenge experienced was with the difficulty of establishing new outlets. This was in large part due to complications in identifying adequate locations and unforeseen costs of branding taxes levied by the government. Major success included an expansion of retail locations, increases in sales and the improvement in management structures. The business study revealed that a large portion of sales are to wholesale.

Discussion and Conclusions

Three key points emerged from this case study. First, results suggest that CC retail outlets are reaching low income consumers, and not only middle and higher income populations. This, together with the lower prices offered by CC, the importance of cost as a reason for shopping at CC, and the perception by consumers that chicken pieces are more affordable than the previous alternative of buying whole/live chickens, collectively suggest that the business presents an affordable alternative for chicken products in these low income neighborhoods, thus improving access. Second, the convenience of the outlet location is a key dimension of availability in this context that CC appears to be successfully addressing, and most

CC consumers agreed that the presence of this outlet affected their frequency of purchase of chicken products. Third, while CC experienced delays in achieving its initial goals with regard to number of new outlets to be opened, it has effectively implemented the inputs gained from the Marketplace program support, and succeeded in increasing its own production, and distribution and sales of chicken products. Notwithstanding, several challenges were faced, most of which were external to the business capacity itself and included limited infrastructure to support a reliable cold chain, and unexpected high costs associated with meeting regulatory requirements and outlet branding.

2. INTRODUCTION

Much of the focus of food-based solutions to malnutrition and related development efforts has been on agriculture and food production. These interventions aim to benefit poor farm households by increasing farm level production, thereby increasing farm incomes and in turn increasing consumption of nutritious foods, or they promote home gardening interventions to increase household consumption of fruits and vegetables (Du et al., 2015). However, most consumers, including in Sub-Saharan Africa, are at least partially if not entirely dependent on markets for food (Tschirley et al, 2015), 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 represents another important strategy for improved nutrition. Food value chains and private sector actors involved in processing, distributing and retailing those foods, 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) and urban (Duran et al 2016) environments. In sub-Saharan Africa, small and medium enterprises (SME) provide a sizeable share of foods in the markets accessed by the poor. 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).

As a leader in identifying and delivering solutions to address malnutrition, the Global Alliance for Improved Nutrition (GAIN) launched the Marketplace for Nutritious Foods (MNF) program, to promote innovation and catalyze private sector engagement in producing and marketing more nutritious foods for lower income households in Sub-Saharan Africa. It does this by improving access to knowledge and networks, and providing technical assistance and competitive funding support to local small and medium scale agri-food enterprises. Since its inception in 2013, MNF has supported 34 businesses in Kenya, Tanzania, Mozambique, and Rwanda.

There is currently a paucity of evidence of the impact of market based initiatives on nutrition and appropriate methodologies to measure factors in the food environment. The experience of the MNF program and its business grantees has the potential to provide valuable insight into the role of local private sector businesses to improve access to nutritious foods, and help fill a knowledge gap on best practices for nutrition-sensitive market based interventions. Chicken Choice (CC), a poultry business in Kenya, is among the MNF program's earliest grantees and presents an ideal case for mid-term project learnings. GAIN conducted an in-depth case study of the CC business and its consumers to inform further project activities and, in doing so, contribute to developing relevant market based indicators of the food environment. The objectives of the case study were to, using innovative and exploratory methods, determine and document:

- I. The availability of chicken products for low income populations in the areas served by the CC poultry business measures
- II. The affordability of chicken products for low income populations in the areas served by the CC poultry business measures
- III. Consumer purchasing and consumption habits
- IV. The reach of the CC retail outlets
- V. The experiences of the business in implementing MNF technical and financial support.

The broader purpose of the case study was to identify the preliminary impacts of the MNF project and refine methodologies for the design and evaluation of similar projects.

3. DESCRIPTION OF THE CHICKEN CHOICE BUSINESS

Chicken Choice Limited started as a family enterprise in 2005 in Ongata Rongai, a suburb on the south-eastern part of Nairobi. At inception, CC was exclusively a distributor of Kenchic Limited¹ chickens, but grew to rearing and selling its own chickens. CC rears both broilers and indigenous (kienyeji) chickens, and sells them at both retail and wholesale levels.

CC differentiated itself by providing small portions and cuts in a market where chickens are typically sold whole or live. The aim of this retail strategy is to make this animal source food more accessible to consumers from all economic backgrounds. The company slaughters and dresses broilers, some of which are portioned according to consumer demands. Portions include backs, livers, gizzards, feet, heads, necks, intestines, skins, bones, boneless breast, wings, legs, drumsticks and thighs. These are distributed to CC retail outlets that sell to individual consumers as well as to third party stockists². The company also sells directly to institutional markets, supplying a number of schools and colleges with chicken meat.

In 2014, CC received a three-year financial and technical grant from the Marketplace to: 1) increase its own chicken production and reduce reliance on third-party suppliers; 2) maintain a cold chain with the purchase of a refrigerator truck; and: 3) expand the number of retail outlets around Nairobi. In addition, in-kind technical support funded by the Marketplace was provided to strengthen the company's financial systems and develop its marketing strategy.

Key factors integral to CC's business model and to the program impact pathway between private sector investment and improved access to nutritious foods include competitive pricing, year-round availability of chicken products, a wide range of small parts, and the presence of retail outlets located in lower income area.

Prior to receiving Marketplace support, CC had nine outlets located in Zimmerman, Marurui³, Mwiki, Dandora, Kangemi, Embakasi, Mlango Kubwa, Rongai and Kahawa West. Nine additional outlets have been established since then with direct support from the MNF in Huruma, Kawangware, Jua Kali Bypass, Lucky Summer, Njathaini, Ruiru, Kenol, Kariobangi and Githurai. Ruiru, Kenol, Kariobangi and Githurai were opened after work on this case study had begun.

¹ Kenchic Limited is a major breeder and supplier in the poultry value chain in the East African region

² In this context, stockists are those consumers who buy in bulk from CC either for resale purposes (e.g. local prepared chicken vendor)

³ The Marurui shop has since been closed due tenancy issues with the landlord.

4. METHODS

A cross-sectional case study design using both quantitative and qualitative methods was used to gather in-depth insights. This analysis was based on two primary sources of data: (i) a consumer based survey of CC, competitor and random shoppers and (ii) in-depth interviews with CC and MNF staff. Data was supplemented by a desk review of project documents at MNF and CC.

4.1. Sampling

Consumer Based Study

Three groups of people were sampled for the consumer based study: CC customers, customers of competitor poultry outlets, and random shoppers in the same market area. Customers were identified as those who had just completed a purchase of chicken products from the outlet being surveyed. The competitor outlets and random shoppers served as comparisons and allowed the researchers to compare perspectives on availability and affordability of safe and nutritious chicken products to lower income households and to gauge the added value of the CC value proposition to consumers. It should be noted that the random shoppers are not meant to represent the general population of the neighbourhood, but to give an idea of the profile of the general shopper and serve as a useful counterfactual.

Seven of the 14 CC outlets operating at the time the case study work commenced were purposively sampled for inclusion in this study. Outlets were sampled to cover a range of production volumes (low, medium and high), and to include a mix of outlets opened by MNF support and those pre-existing. In an effort to at least have one GAIN supported outlet per sales volume category, the following CC outlets were sampled: Zimmerman, Kawangare, Huruma, Dandora, Pangani/Mlango Kubwa, Mwiki and Jua Kali (Annex A). For every CC outlet sampled, the researchers, with guidance from GAIN and CC, selected a competitor outlet within the same locality to include in the study. These included Chicken Palace in Zimmerman; Keshi Meat House and Shastala Enterprises in Jua Kali; Chicken Point in Kawagware; a nameless shop in Mlango Kubwa; Benida Kuku Shop in Mwiki; and Chicken Centre in Dandora.

Based on a sample size calculation with 95% confidence determined to detect a 14 percentage point difference in access to chicken, 126 individuals per group were deemed necessary. The research team oversampled to account for a non-response rate of 20%. All consumers who purchased chicken products at the outlets during the data collection period at a locality were invited to participate in exit interviews. Random shoppers within a 200 meter radius of a CC outlet were also approached for interviews. In total, 153 CC consumers, 132 competitor consumers and 151 random shoppers were surveyed.

Business Study

Interviews were conducted with relevant staff at CC and GAIN. This included four CC management staff, seven CC shop managers, six competitor shop managers, 10 CC stockists, three GAIN MNF staff. Observations were also made in fourteen outlets and one processing plant. A total of 30 in-depth interviews were conducted.

4.2. Data Collection

Data were collected in Kiswahili and English, depending on the preferred language of the respondent, between April and June of 2016 by Kengrow Ventures by Kengrow Ventures. Enumerators were trained for two days on informed consent, the survey questionnaire, observation techniques, and in-depth

interview guides. All tools were pretested for one day to ensure they were able to elicit the information required, test the flow of questions, the language used, and the length of time taken to administer each questionnaire.

Data was collected using structured questionnaires for consumer exit interviews and random shoppers; in-depth interview guides for staff at retail outlets and stockists, CC management and staff, and GAIN staff. An observation tool for retail outlets and the slaughter house was used to collect information on pricing, hygiene, cold chain and waste disposal.

Ethical approval for the study was obtained from the African Medical and Research Foundation (AMREF) Ethical and Scientific Research Committee (ESRC). All participants were informed of the study's purpose and 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.

4.3. Data Analysis

Consumer Based Study

Data was entered using EPI Info, and analyzed in IBM SPSS Statistics 24 and STATA 13.0 by Kengrow and GAIN research staff. The main variables of interest in this investigation were proxy indicators of chicken availability, affordability, consumer purchasing habits and program reach.

Availability

Availability was proxied by asking respondents (i) whether the presence of outlet influenced frequency of purchase and (ii) how purchase was influenced by the presence of the outlet.

Affordability

Affordability was assessed in three ways, using both subjective and objective measures. First, respondents were simply asked about their perceptions on the affordability of different parts of chicken from the outlet and any other source. Second, the pricing at CC and competitor locations were compared. Third, the percentage of consumers considered to be in a low income category was determined.

Frequency of Purchase

Respondents were asked how often they purchased any chicken in the last three months, which was used to calculate monthly purchasing frequency. It should be noted that this question concerned any chicken, and was not specific to parts.

Quantity Purchase

A number of data points were combined to determine the average monthly amount of chicken purchased per household. Respondents were asked to reflect on the last three months and (i) list the chicken pieces they usually buy and (ii) the quantity of each. Quantities of usually purchased items were summed to calculate the average amount of chicken purchased per visit. United States Department of Agriculture (USDA) retention factors were applied to all chicken parts⁴ to determine the average edible amount of chicken purchased per visit. Quantity per visit and frequency data were multiplied to obtain

⁴ With the exception of heads, skins, bones and feet.

monthly purchase amounts. It should be noted that because frequency data was not specific to parts, the monthly purchase amount is an approximate measure.

Reach

The average monthly amount of chicken purchased was applied to historical sales data to estimate the average number of households reached per month since the program began. This estimate of reach is conservative in its assumption that sales are to repeat customers. The number of women and children reached was calculated based on the prevalence of these populations in the sample. A proxy variable to measure the coverage of the outlets in specific areas of operation was developed based on the number of households reached and the population of the area.

Demographic data were also collected on household income, food expenditure, and intra-household allocation of chicken. Low-income was defined as a household income less than 15,000KSH per month, equivalent to approximately \$5 USD per day, based on the minimum wage in the Nairobi environs of 15,980 per month (KNBS, 2015). Bivariate analyses by consumer type were conducted for variables of interest-

Business Case Study

In depth interviews were recorded and transcribed. Transcripts were analyzed in NVivo 10 and analyzed for emergent themes (Glaser, 1976).

5. RESULTS

5.1. Consumer based study

5.1.1. Characteristics of Study Participants

Respondents in all three groups were similar with respect to demographic factors (Table 1). The mean age of respondents was thirty years, with a range of 18 to 82 years. Respondents were by majority female, married and had completed some secondary school or more. The average household has three individuals, with one woman per household. The distribution of respondent across household income categories was fairly equal, though in all three groups the slight majority of households earned less than 15,000 KSH/mo. The mean duration of residence in the locality was 7.6 years. An analysis of variance showed no significant difference between the respondent categories in any of the above metrics (Table 1). Most respondents were either in business, which included self-employed ventures, or casual labourers. There was a significant difference in occupation across the respondent types with random shoppers being more likely to be business or self-employed people (58%) than CC (41%) and competitor consumers (31%) ($P < 0.01$).

	CC Outlet		Competitor Outlet		Random		ANOVA/Chi2
	Mean	SD	Mean	SD	Mean	SD	p-value
Age , years	33.2	10.0	33.4	9.8	33.6	8.6	0.92
Gender, % women	87		80		85		0.73
Education							0.73
None	0%		1%		0%		
Primary	20%		22%		21%		
Secondary	40%		39%		47%		
Above	40%		38%		32%		
Occupation							0.002
Unemployed	12%		15%		10%		
Professional	22%		27%		13%		
Business-person/ self employed	41%		31%		58%		
Farmer	0%		1%		1%		
Laborer	12%		13%		13%		
Other	12%		14%		5%		
Marital Status							0.99
Single	29%		30%		26%		
Married	64%		62%		67%		
Divorced /separated	5%		5%		4%		
Widowed	3%		3%		3%		
Household Income							0.10
<=15,000	37%		44%		49%		
15,000-30,000	36%		29%		30%		
>30,000	28%		27%		21%		
Household Size	3.3	1.8	3.2	1.8	3.4	1.9	0.8257
Length of stay at current residence	7.1	7.8	7.3	8.6	7.0	6.1	1.0
# of women in HH	1.1	0.8	1.1	0.8	1.0	0.7	0.4
# of children < 5 in HH	0.3	0.6	0.3	0.5	0.4	0.6	0.5

CC = Chicken Choice; SD = standard deviation; HH = household

5.1.2. Availability

CC respondents had been customers of their outlet for a longer period of time than respondents from competitor outlets. CC consumers on average made their first purchase at the outlet 1.8 years ago, while customers of competitor outlets had made their first purchase at that outlet 0.7 years ago (Table 2). When asked whether the location of the outlet influenced the frequency of purchasing 83% of CC and 65% of competitor consumers responded positively. All differences reported above were statistically significant at $p < 0.01$ (Table 2).

The main reasons given for choosing to buy chicken at the outlet are outlined in Table 3. Convenience, quality, and cost emerged as the most common determinants of outlet of choice. Among CC consumers, cost and quality of product emerged as the most frequently cited factors, while convenience of location

and quality emerged as the most frequent for competitor consumers. Overall, convenience of location, quality, cost, and food safety and hygiene were the most frequently stated reasons for choosing either outlet. The difference in distribution of responses however, did not differ significantly between groups. Few respondents noted convenience of the units sold, ease of preparation as factors influencing their decisions.

Surveys of random shoppers revealed that 87% were familiar with CC and 67% had purchased their products in the past (Annex B). While not a direct measure of availability, this points to CC's presence in the area.

	Type of consumer				P
	CC Outlet		Competitor Outlet		
	Mean	SD	Mean	SD	
Number of years since first purchase at outlet	1.84	2.16	0.731	1.8	P <0.001
Duration since first purchase, (%)					P <0.001
Less than 3 months	18		44		
3 to 11 months	22		19		
1-2 years	37		31		
More than 2 years	23		6		
Presence of outlet influence on frequency of purchases, (%)					P <0.01
Yes	83		65		
No	17		35		
Direction of influence on frequency of purchases, (%)					P <0.001
More	75		50		

	Type of consumer			P-value
	CC Outlet	Competitor Outlet	Both	
Convenience of location, (%)	18	33	25	0.29
Cost of product, (%)	22	17	20	0.14
Good quality of products, (%)	20	28	24	0.4
Food safety and hygiene, (%)	17	19	18	0.91
Variety of products, (%)	11	9	10	0.40
Good customer care, (%)	8	6	7	0.62
Convenience of units sold, (%)	7	5	6	0.29
Overall value for money, (%)	5	5	5	0.91
Convenience of state of preparation of products, (%)	5	4	5	0.47

5.1.3. Affordability

Overall, chicken pieces emerged as more affordable than whole chickens. Respondents who had just purchased chicken from one of the outlets tended to find all parts of chicken more affordable than

random shoppers, though the differences in response were not statistically significant (Table 4). Chicken pieces with bones were the exception, with buyers of chicken (CC and competitor) finding these significantly more affordable than random shoppers.

Only one in three CC respondents (30%) felt the price of whole live chicken was at least somewhat affordable. However, almost one in two (46%) felt it was somewhat or very unaffordable. Similar trends were observed among the competitor and random shoppers and with whole dressed chickens (Annex C).

Chicken pieces of meat with bones, on the other hand, were perceived to be quite affordable with 68% of all respondents listing these as somewhat or very affordable. As might be expected, buyers of chicken found these pieces to be more affordable, on average, than random shoppers. Over three quarters (77%) of CC consumers and competitor consumers (73%) felt the price was somewhat or very affordable compared to just over half (55%) of random shoppers reporting the same ($P=0.005$).

Approximately two in three CC consumers (62%), competitor consumers (60%) and random shoppers (67%) felt offal were somewhat or very affordable. Similarly, about 7 in 10 respondents (72%) felt other chicken pieces (feet, skin, bones), were somewhat or very affordable. There were no significant differences between the respondent categories for the affordability of offals.

Trends in the perceived affordability of chicken products at the outlet paralleled perceptions of affordability of these products from any source (Annex D). At the outlet of choice, chicken pieces were still perceived as most affordable and whole chickens as least affordable. This was also true when affordability was analyzed by income category (Annex E). Both CC and competitor consumers felt that chicken was more affordable at the outlet they shopped at than from any other source, which is to be expected, given that cost is one of the more frequently mentioned factors influencing purchase. Details of responses for the affordability of different chicken parts at the source outlet are presented in Annexes D and E.

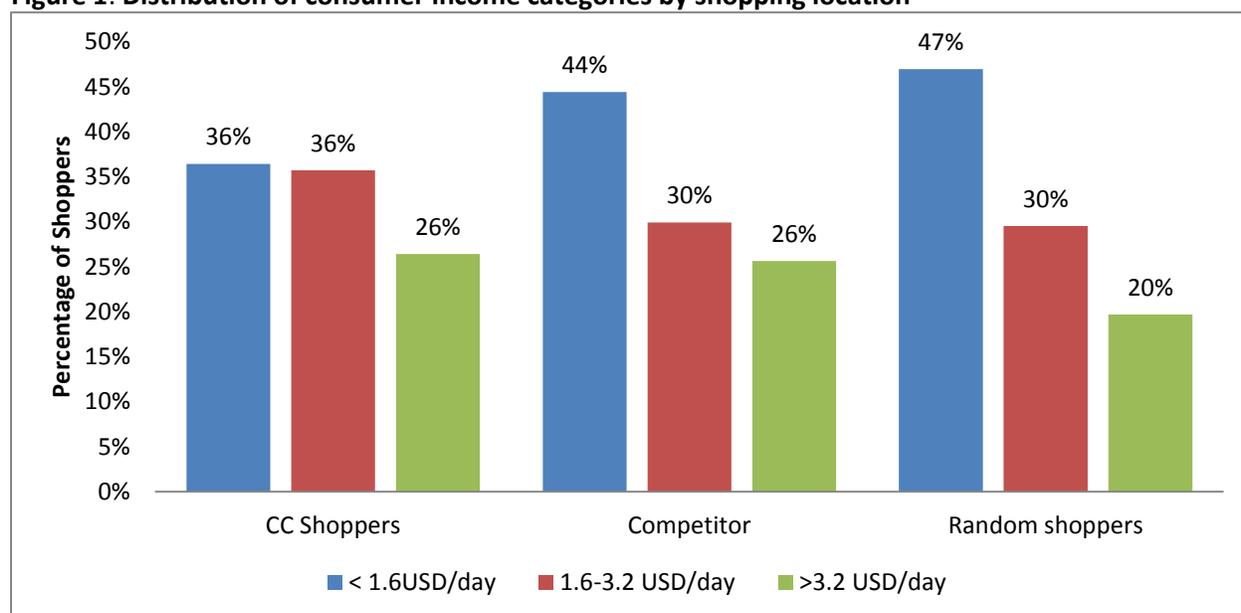
Table 4: Perceived Affordability of Chicken Parts at Any Source				
	Type of consumer			Chi2 P-Value
	CC	Competitor	Random	
Whole Chicken, (%) (n=279)⁺				0.107
Very or somewhat affordable	28	35	27	
Sometimes affordable/sometimes not	26	24	29	
Somewhat or very unaffordable	46	41	44	
Chicken pieces*, (%) (n=267)⁺				0.005
Very or somewhat affordable	77	73	55	
Sometimes affordable/sometimes not	16	15	35	
Somewhat or very unaffordable	7	12	10	
Offals, (%) (n=99)⁺				0.113
Very or somewhat affordable	72	70	67	
Sometimes affordable/sometimes not	19	16	33	
Somewhat or very unaffordable	9	14	10	
Feet, skin, bones (%) (n=164)⁺				0.119

Very or somewhat affordable	77	76	62	
Sometimes affordable/sometimes not	18	13	34	
Somewhat or very unaffordable	5	11	4	

CC = Chicken Choice; *Not that not all respondents were familiar with the prices of different chicken prices. *Pieces include thighs, leg, breast, back.

A comparison of prices between CC and competitor outlets revealed that CC prices for chicken and chicken parts were generally lower than the prices at competitor outlets within the same locality (Table 5). Furthermore, the distribution of consumer income categories was the same across all three groups. Between 36% and 47% of all respondents were low income, and these values did not differ significantly between the groups.

Figure 1: Distribution of consumer income categories by shopping location



Where 1.6USD per person/day = 15,000KSH per household/month and is defined as low income.

Table 5: Price of Chicken Products within CC and Competitor Outlets in Zimmerman, Huruma and Mwiki Localities

Chicken Part(s)	CC Outlet Prices (Ksh per Kg)				Competitor Outlet Prices (Ksh per Kg)			
	Zimmerman	Huruma	Mwiki	Mean	Zimmerman	Huruma	Mwiki	Mean
Whole chicken	400	360	400	387	400	400	420	407
Backs	240	240	240	240	260	240	270	257
Gizzards	400	360	400	387	400	400	480	427
Livers	200	200	220	207	220	200	220	213
Legs	400	360	400	387	400	-	-	400
Skins	120	100	120	113	200	240	-	220
Wings	400	360	400	387	-	-	-	-
Necks	160	160	180	167	220	200	200	207
Feet	80	80	80	80	100	100	-	100

Hearts	200	200	240	213	-	-	220	220
Bones	-	-	-	-	-	160	-	160
Katakata/ Assorted	240	240	240	240	-	280	280	280

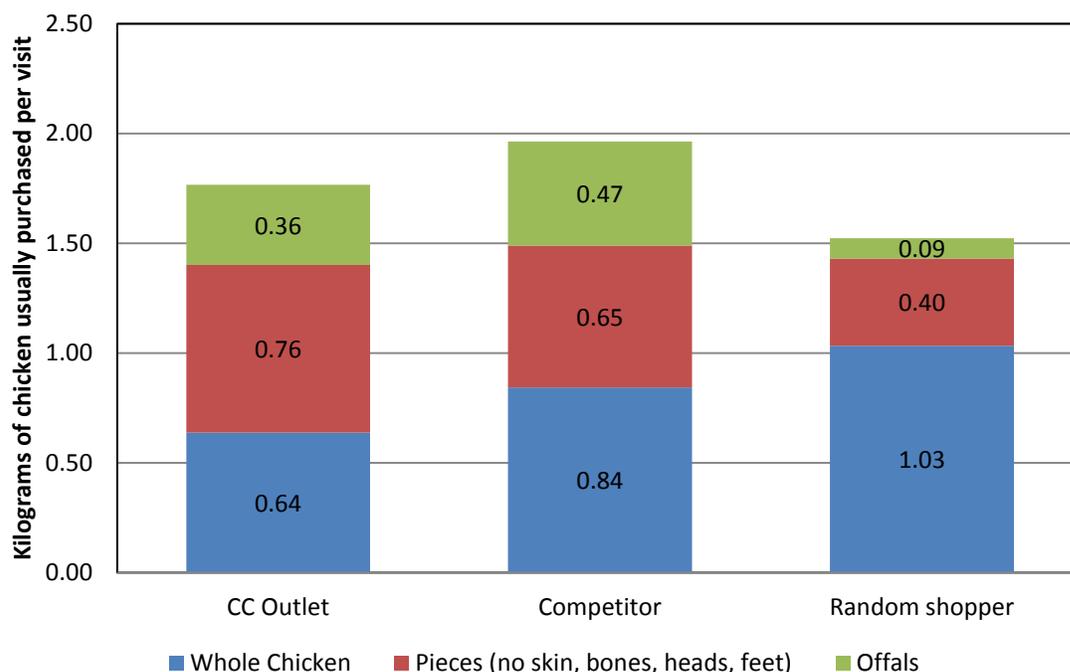
5.1.4. Consumer purchasing habits

The usual purchasing habits of consumers who reported purchasing chicken in the last three months are presented in Table 6. The total amount of chicken purchased per visit did not differ across groups ($p = 0.45$). CC consumers purchased on average 1.76kgs of chicken per visit compared to 1.96 and 1.25 for competitor and random shoppers, respectively. These trends were similar when accounting for just the edible portion of the chicken (Table 6). Both CC and competitor consumers purchased chicken about five times per month, which was significantly more frequently than random shoppers, who purchased chicken about three times a month.

Of the monthly purchases, CC shoppers purchased fewer whole chickens, and more chicken pieces than both competitor customers and random shoppers (Figure 2). This is consistent with CC's model of selling small chicken cuts and the perceived affordability data reported in Table 4. Intestines, skins, bones, heads and feet were not commonly purchased. Details of parts purchased are presented in Annex F.

	Type of consumer						
	CC Outlet		Competitor Outlet		Random		ANOVA
	Mean	SD	Mean	SD	Mean	SD	p-value
Frequency of chicken purchases per month	5.16 ^a	4.85	4.91 ^a	3.36	3.41 ^b	3.46	0.00
Mean amount of chicken purchased per visit (kg)	1.76	1.89	1.96	3.62	1.52	1.49	0.45
Mean amount of chicken purchased per month (kg)	8.90	12.58	11.42	33.64	5.86	11.50	0.20
Mean edible amount of chicken purchased per visit	1.25	1.30	1.40	2.55	1.13	1.08	0.54
Mean edible amount purchased per month	6.34	8.83	7.84	21.29	4.32	8.29	0.22

CC = Chicken Choice SD = standard deviation; Data on usual purchasing excludes purchased amounts of bones, skins, feet, and heads as there are no conversion values for the edible portion of these foods. The amount of these parts purchased was very small and did not differ between groups (Annex F). Where a significant difference was detected across the three groups, ^{ab} are used to represent pairwise differences.

Figure 2: Amount of Chicken usually purchased/visit by Chicken Choice, Competitor and Random Shoppers

CC = Chicken Choice

5.1.5. Program Reach

It was estimated that the program reached an average of 1,237 households per month over the life of the project (Table 7). This translated to an average of 4,021 individuals reached per month of which 1,349 were women, 406 were children under five years of age, and 1,488 were considered low income based on a monthly household income. There are a total of 538,990 individuals in the administrative units where CC has outlets, making program coverage just under one percent of all residents (KNBS, 2009). Figures of reach are based on the assumption that sales are to repeat customers, and that average monthly purchases have been constant over the year. It should also be noted that this figure is only representative of sales at CC retail locations for home consumption, and does not include all of CC sales (Annex G).

Table 7: Estimates of Monthly Project Reach through Retail Locations

	2014		2015		2016 (Jan-Oct)		Average ⁺
	Outlets Surveyed	All CC Outlets	Outlets Surveyed	All CC Outlets	Outlets Surveyed	All CC Outlets	All CC Outlets
Average monthly sales (Kgs)	5511	8095	7390	10357	3906	14563	11005
Estimated # of HH reached	619	910	830	1164	439	1636	1237
Estimated # of individuals reached	2014	2958	2700	3784	1427	5321	4021
Estimated # of women reached	676	992	906	1270	479	1785	1349

Estimated # of children < 5 reached	204	299	273	382	144	538	406
Estimated # of low income individuals reached*	745	1094	999	1400	528	1969	1488

CC = Chicken Choice; KSH = Kenya Shillings; HH = household; * this yearly average is based on the full years of 2014 and 2015. 2016 was not included in the average calculation because less than a full years' data was available. *low income = income under 15,000 KSH

5.2. Business-Level Findings

CC has three main goals specified in its business plan. These were to (i) open 10 new outlets to increase retail sales to increase sales to 36 million KSH (295,250 USD) by the end of 2016, (ii) reduce dependence on third party suppliers by increasing own production capacity to 10,000 birds per month by the end of 2014, and 15,000 per month by the end of 2016 (iii) Expand contract farmer network to 3,000 birds per month.

5.2.1. Successes

Through the technical and financial grant received from GAIN, the following emerged as significant achievements.

- (i) **Nine new outlets** have been opened out of a projected ten (by November 2016). The new outlets have consequently increased their turnover by about 16%. Sales revenue increased by 32% in 2014 and 20% in 2015. The volume of chicken sold increased from 130 tons to 150 tons within the same period. It is unclear, however, given the high volume sold to stockists and wholesalers the extent to which this is reaching the targeted population, i.e. lower income households in Nairobi (Annex E). While chicken sold to stockists at retail location is likely sold and consumed locally, the relative amount sold to stockists and wholesalers is aggregate.
- (ii) **The number of birds sold per month increased** from 5000 to about 10,000 birds with a targeted increase of 15,000 in the coming months. CC currently produces about 70% of the chicken it sells, up from 50% in 2013.
- (iii) **CC has achieved better financial management** through automated financial operations (ERP) and the institution of internal controls.
- (iv) **CC has developed a specific brand** distinguishing itself from its former Kenchic branding. This was facilitated by the market survey supported by Marketplace and has contributed towards assurance of quality and consumer confidence.
- (v) **Acquisition of a refrigerated truck** to complement their existing cold room has resulted in CC being able to guarantee the cold chain and quality of the products from the slaughter house, to cold storage and finally the retail outlets. The cold room has enough storage capacity that enables CC to buy the chicken when there is a glut and stock up for the lean months when chicken supply drops. This helps them to streamline their sales and be able to keep the price of the chicken products stable.
- (vi) **Most of the CC outlets are clean and food is stored in freezers.** CC considers cleanliness (food safety and hygiene) as well as consistency in supply as key to maintaining and attracting consumers. New CC outlets use chilled displays that maintain the product at safe temperatures, though observations of older outlets showed room for improvement with regard to food handling.

5.2.2. Challenges

The main challenge experienced that emerged from interviews was the difficulty of establishing new outlets, which was ultimately overcome. This was in large part due to complications in identifying adequate locations, and unforeseen costs of branding taxes levied by the government.

- (i) **CC experienced difficulties in finding sites for outlets.** Areas with high human traffic were targeted for sales purposes but permanent structures were difficult to come by in these areas. Where these were available, reasonable rental prices and reliable and legal power connections were scarce. The difficulty in getting appropriate shop location has resulted in a number of CC shops being located in areas not heavily patronized by retail consumers, which has further implications for sales.
- (ii) **Extra levies by the county government** for branding created unforeseen costs. Although branding of the outlets was meant to give CC visibility in the market, it brought new challenges. In many CC outlets the branding, sign posts and light boxes had to be removed. In addition, significant theft of the sign posts and top boxes by scrap metal dealers made branding expenditure per shop a recurrent cost.
- (iii) **Timeline** became an issue in light of the above two points which created challenges for the business to meet its projected sales goal in their anticipated timeline.
- (iv) **Underinvestment in production.** CC staff also noted that the business plan sales target was ambitious, given the above constraints, but also due to under-investment in production. Some key factors such as inflation and the cost of establishing shops in certain areas were not factored in the budget. According to CC management, increasing production requires much more than had originally been budgeted. In hindsight, the management feels the plan was quite ambitious and may have also required technical assistance from a local value chain expert. They also feel that they should have focused more on marketing and less on production.

6. DISCUSSION AND CONCLUSIONS

In this pilot case study the contribution of a to increasing the availability and affordability of chicken products was assessed using innovative and exploratory measures, and the experiences of the business in implementing the technical and financial assistance provided by the program to increase their scale was documented. This work provided valuable learnings for assessment strategies of similar interventions and preliminary insights into potential outcomes of the MNF program. From our results, several key findings emerged, namely that CC is reaching lower income consumers with chicken products that are considered by many in the marketplace to be affordable, and that consumer self-report suggests the presence of the CC outlet has influenced their frequency of purchase of chicken products. Further, while several, mostly external challenges were faced by CC in implementing their business plans, in particular in increasing their reach into low income neighborhoods through additional retail outlets, the business has progressively increased production and sales and remains profitable while delivering products at competitive prices in accordance with the original value proposition.

Affordability

These results indicate that the CC retail locations and product sales are inclusive of lower income consumers and have supported increased affordability of chicken products in these market areas. Our results showed that the proportion of low income consumers (36-44%) was similar at CC and competitor outlets, and that the income profile of those purchasing chicken on the day of the interview did not differ from that of random shoppers in the same market area, providing support for the inclusivity of lower income households. Second, the consumer survey indicated that the cost of product was one

important factor affecting their decision to buy chicken products at CC, and that chicken parts (part of the main value proposition of CC) were considered to be affordable by more consumers than whole chicken, which was historically the main option for retail chicken sales. Finally, the market study indicated that CC pricing for various chicken parts was consistently lower than competitor pricing (i.e., an average of 5% lower for whole chicken, 3-9% lower for offals, and 14% lower for assorted parts).

While it was not the intention of the study to assess the reach of bulk CC sales, it is possible and likely that some of the larger volume of product sales at retail locations sold to stockists is also reaching lower income consumers (eg. urban street food vendors). The extent to which the larger volume of sale to wholesalers contributes to access among low income consumers is difficult to assess given the diffuse nature of these sales.

Availability

This study provided some evidence that CC influenced the availability of chicken products in local food environments. First, the majority of consumers (83%) reported that the presence of a chicken outlet in the selected retail market area influenced the frequency of purchase of chicken. Second, buyers consistently noted that the convenience of the location was an important factor in choosing to purchase chicken at the selected outlet. The ability of the CC outlets to reach consumers in the low income neighborhoods they serve is also supported by the fact that 81% of random shoppers in the market areas had heard of the CC outlet, and 67% reported to have purchased chicken there in the past (Annex F). The implication of these results is twofold. They suggest that convenience of location is a key dimension of food availability in this area, alongside price and quality and that changing people's food environment has the potential, in part, to influence behavior. These are important findings for the context of CC, whose value proposition is centered on increasing convenient outlet locations, and speaks to CC's impact on availability. This also provides valuable insight for the targeting of other market-based food and nutrition interventions in similar settings.

Another important factor in determining a business' ability to influence the consumption of nutritious foods beyond availability and affordability is its ability to provide products that are desirable and safe. The importance of food quality and safety should not be overlooked in these populations. These traits also formed part of the value proposition of CC, which was supported by investment through the MNF program on cold chain capability and emphasis on compliance with food safety requirements. The substantial number of local chicken consumers who indicated that product quality and food safety and hygiene (60%) influenced their decision to shop at the chosen outlet, provides further support for the potential of such businesses (CC or competitors) to influence consumer purchase practices.

CC's business model rests heavily on wholesale. Noted above is that CC's retail locations are well targeted to reach lower income urban populations living in the relative near vicinity of its production facility. CC's ability to sustainably sell chicken pieces at low price points in retail locations is intentionally coupled with, and depends on, the sale of high-margin fillet cuts to wholesalers. What the business case study revealed is that the vast majority of sales are to these wholesalers. So while CC retail outlets do appear to be increasing availability of animal source foods at affordable prices, the scale attainable will depend on the continued expansion of its retail operations in neighborhoods serving low income households while maintaining profitability.

Most of the challenges faced by CC since receiving MNF support originated from external factors, outside the immediate control of the business. For example, limitations in identifying suitable retail outlet facilities due to the need for minimum infrastructure standards to support cold chain and food

safety and hygiene requirements, represent an important consideration for improved enabling environments for increasing access to perishable nutritious food products in food environments accessed by low income households. Nonetheless, these difficulties provide valuable experience to improve business planning support within the MNF program.

This pilot case study faced several limitations. The cross sectional nature of our design limits our ability to make causal inferences around impact of CC and its retail business model on consumption frequency and amounts of chicken products. It is also not possible to assess contribution to the ultimate goal of whether any increased purchase and consumption may have resulted in increased intake of animal source foods in general and hence in increased dietary diversity and nutrient intake adequacy. Nonetheless, the mixed-methods approach, and triangulation of availability and affordability measures using multiple data points proved an innovative and informative way to address design issues. Given the limited evidence on market-based agribusiness interventions to improve access to nutritious foods in the food environment, this pilot study contributes to our understanding of useful and relevant constructs to measure and understand business processes and consumer-level outcomes.

Next Steps

GAIN is in the process of designing a series of cross-sectional case study evaluations for selected MNF-supported businesses in Kenya, Mozambique and Rwanda. For the consumer- and market-based surveys, quantitative estimates for key outcome variables will be strengthened and complemented with qualitative ethnographic methods to better understand the impact that the MNF business or products may have had since being introduced, and to account for historical market dynamics (i.e., emergence of competitors). While unmeasured here, future research should consider changes in the density of competing outlets established due to the success of the invested business in its assessment of availability. What also remains to be determined is whether these apparent improvements in availability, access and desirability of the nutritious food products has a positive overall effect on total consumption of chicken or animal source foods amongst consumers. Quantifying the additionality of nutritious food businesses on consumer purchase and consumption of these products (i.e., taking into account substitution from other available sources) will require more extensive evaluation methods. Evaluation of the business operations, successes achieved and internal/external barriers encountered will be further refined, and the relevance and effectiveness of the MNF program inputs will also be assessed across country-MNF programs. Additional case studies may provide further valuable insights into where policy and infrastructure improvements could improve the enabling environment for nutritious food businesses.

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ANNEX A: FACTORS CONSIDERED IN THE SAMPLING OF CHICKEN CHOICE OUTLETS

CC Outlet status by Sales Volume	Outlet Name/Locality	Established with GAIN-MNF Support	Number of Stockists per CC Outlet	Sampled Outlets
High Volume	Zimmerman	No	2	X
	Kawangware	Yes	2	X
	Huruma	Yes	3	X
Medium Volume	Embakasi	No	1	
	Dandora	No	2	X
	Kangemi	No	1	
	Rongai	No	0	
	Pangani/Mlango Kubwa	No	7	X
Low Volume	Kahawa West	No	1	
	Mwiki	No	2	X
	Jua Kali	Yes	4	X
	Marurui (<i>shop closed</i>)	No	0	
	Lucky Summer	Yes	3	
	Njathaini	Yes	N/A	

ANNEX B: RANDOM SHOPPERS' AWARENESS OF THE CC OUTLET

	Random Shopper
Ever heard of CC in locality	
Yes	81
No	19
Know location	
Knows	84
Does not know	12
Not sure	4
How got to know	
Neighbor/friend	42
Family member	3
Saw shop while passing	36
Saw signage/advert	13
Others	6
Ever bought chicken products	
Yes	67
No	33

ANNEX C: PERCEIVED AFFORDABILITY OF CHICKEN PARTS AT ANY SOURCE

	Type of Consumer			P-Value
	CC Consumers	Competitor consumers	Random shoppers	
Whole live chicken				0.107
Very unaffordable	30	26	24	
Somewhat unaffordable	16	15	20	
Sometimes affordable/sometimes not	26	24	29	
Somewhat affordable	20	18	7	
Very affordable	8	17	20	
Whole dressed chicken (%)				0.409
Very unaffordable	11	12	19	
Somewhat unaffordable	13	8	15	
Sometimes affordable/sometimes not	28	22	24	
Somewhat affordable	27	31	22	
Very affordable	21	27	20	
Chicken pieces - meat with bones (%)				0.005
Very unaffordable	5	7	7	
Somewhat unaffordable	2	5	3	
Sometimes affordable/sometimes not	16	15	35	
Somewhat affordable	39	27	15	
Very affordable	38	46	40	
Chicken pieces - offals (%)				0.113
Very unaffordable	6	11	3	
Somewhat unaffordable	3	3	7	
Sometimes affordable/sometimes not	19	16	33	
Somewhat affordable	41	19	10	
Very affordable	31	51	47	
Chicken pieces – feet, skin, bones (%)				0.119
Very unaffordable	3	7	0	
Somewhat unaffordable	2	4	4	
Sometimes affordable/sometimes not	18	13	34	
Somewhat affordable	32	24	18	
Very affordable	45	52	44	

ANNEX D: PERCEIVED AFFORDABILITY OF CHICKEN PARTS AT SOURCE

	Type of Consumer		
	CC Consumers	Competitor Consumers	P-Value
Whole live chicken (%)			0.322
Very unaffordable	23	12	
Somewhat unaffordable	11	10	
Sometimes affordable/sometimes not	31	30	
Somewhat affordable	18	18	
Very affordable	17	30	
Whole dressed chicken (%)			0.471
Very unaffordable	8	8	
Somewhat unaffordable	8	10	
Sometimes affordable/sometimes not	27	17	
Somewhat affordable	25	32	
Very affordable	31	33	
Chicken pieces - meat with bones (%)			0.747
Very unaffordable	1	2	
Somewhat unaffordable	2	3	
Sometimes affordable/sometimes not	12	13	
Somewhat affordable	29	32	
Very affordable	56	50	
Chicken pieces - offals (%) (n=94) (P=0.793)			
Very unaffordable	0	4	2
Somewhat unaffordable	3	1	2
Sometimes affordable/sometimes not	11	14	13
Somewhat affordable	32	32	32
Very affordable	54	49	51
Chicken pieces – feet, head, skin, bones (%)			0.443
Very unaffordable	0	3	1
Somewhat unaffordable	1	3	2
Sometimes affordable/sometimes not	13	12	13
Somewhat affordable	24	31	27
Very affordable	62	52	57

ANNEX E: PERCEIVED AFFORDABILITY OF CHICKEN PARTS BY INCOME

	Level of Income			Chi2 P-Value
	Low	Medium	High	
Whole Chicken, (%) (n=279)⁺				0.07
Very or somewhat affordable	21%	27%	45%	
Sometimes affordable/sometimes not	11%	12%	25%	
Somewhat or very unaffordable	47%	42%	39%	
Chicken pieces*, (%) (n=267)⁺				0.02
Very or somewhat affordable	54%	82%	77%	
Sometimes affordable/sometimes not	20%	35%	35%	
Somewhat or very unaffordable	11%	4%	13%	
Offals, (%) (n=99)⁺				0.47
Very or somewhat affordable	58%	74%	75%	
Sometimes affordable/sometimes not	16%	26%	40%	
Somewhat or very unaffordable	14%	3%	15%	
Feet, skin, bones (%) (n=164)⁺				0.083
Very or somewhat affordable	62%	80%	83%	
Sometimes affordable/sometimes not	18%	33%	33%	
Somewhat or very unaffordable	7%	4%	10%	

ANNEX F: USUAL AMOUNTS OF CHICKEN PIECES PURCHASED

Chicken Type usually purchased (kg)	Type of Consumer						ANOVA P-value
	CC Outlet		Competitor Outlet		Random		
	Mean	SD	Mean	SD	Mean	SD	
Whole chicken	0.64 ^a	1.08	0.84 ^b	1.31	1.03 ^b	0.95	0.03
Breast	0.08	0.25	0.12	0.86	0.08	0.24	0.78
Legs	0.08	0.21	0.14	0.86	0.04	0.17	0.41
Drumsticks	0.11	0.36	0.08	0.23	0.12	0.46	0.63
Thighs	0.14 ^a	0.52	0.06 ^b	0.19	0.02 ^b	0.12	0.03
Intestines	0.04	0.04	0.01	0.09	0.00	0.00	0.57
Skins	0.02	0.10	0.25	2.37	0.00	0.00	0.29
Bones	0.00	0.00	0.02	0.19	0.00	0.00	0.34
Wings	0.03	0.14	0.03	0.15	0.03	0.13	1.00
Livers	0.21	0.96	0.32	2.38	0.06	0.43	0.45
Necks	0.05	0.18	0.10	0.29	0.04	0.18	0.08
Gizzards	0.12 ^a	0.24	0.14 ^a	0.30	0.03 ^b	0.14	0.00
Feet	0.02	0.13	0.02	0.11	0.00	0.03	0.43
Heads	0.00	0.04	0.00	0.03	0.00	0.00	0.57
Back	0.22 ^a	0.37	0.08 ^b	0.21	0.06 ^b	0.20	<0.001
Assorted	0.05 ^a	0.20	0.01 ^b	0.08	0.00 ^b	0.00	0.01
Katakata	0.00 ^a	0.00	0.03 ^b	0.13	0.00 ^a	0.00	0.01

ANNEX G: SALES ATTRIBUTABLE TO BULK BUYERS

Outlet	% Sale Attributed to Bulk Buyers
Kawangware	90
Kangemi	75
Huruma	90
Lucky Summer	50
Mlango Kubwa	90
Kahawa West	50
Dandora	75
Mwiki	50
Embakasi	45
Zimmerman	20
Njathaini	60
Jua Kali (Northern By-Pass)	75
Average	64