



Marketing potential for Commercial Sorghum Malt in Northern Ghana

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ABSTRACT

As part of research towards enhancing the value chain of sorghum utilisation in Ghana, a study was conducted in four districts in the Northern and Volta regions of Ghana, to investigate the marketing prospects for commercial sorghum malt. Purposeful sampling technique was employed to select the communities and snowball sampling was used to identify the brewers and maltsters in the communities. Two hundred and fifteen (215) respondents were interviewed and the data obtained was analysed using descriptive statistics with the aid of Statistical Package for Social Sciences (SPSS) version 16. Majority of brewers (95 %) were willing to expand their production level while large proportion (85 %) of brewers were willing to purchase commercial malt. This is an indication that commercial sorghum malt has marketing potential in the study area.

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INTRODUCTION

Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives (American Marketing Association, 1964). This definition reveals that marketing involves more than just an individual activity such as a sales or promotion. Effective marketing requires that managers recognize the interdependence of these various activities and how they can be combined to develop a marketing program. Sorghum (*Sorghum bicolor*) is a tropical cereal grass which is cultivated in southern Africa over 3000 years. Today, sorghum is cultivated across the world in the warmer climatic areas. In terms of volume it is the world's fifth most important cereal grain, after wheat, maize, rice and barley. Sorghum is still largely a subsistence food crop, but is increasingly becoming the foundation for successful food and beverage industries (Taylor, 2003). In Africa, the major sorghum growing areas run across the West Africa, south of the Sahara to the coast and eastward into Sudan, Ethiopia and Somalia (House, 1995). In West Africa sub region among other uses sorghum is malted and used to brew various traditional beers (Demuyakor and Ohta, 1991). Beer production from sorghum grain or malt is an economically viable option for countries in the West Africa sub region since barley cannot be cultivated in tropical Africa (Mugode, 2009). Malts are produced when cereals are subjected sequentially to steeping, germination and kilning under controlled conditions. In spite of the availability of several cereal types, barley has traditionally been the grain of choice when it comes to malting. In tropical Africa, however, barley cultivation has not seen any success. Thus, industries that use barley malt as their major raw materials have to rely on imports of this grain. This has not been a problem only to the industries concerned, mostly brewing industries, but also to the economies of mostly Tropical African countries. Therefore, some tropical cereals

including sorghum have been investigated for their malting properties (Beta, *et al.*, 1995, Dufour *et al.*, 1992). The potential of sorghum as an alternative substrate for lager beer brewing has been cited in several parts of Africa, particularly in Nigeria and elsewhere (Agu and Palmer, 1998; Owuama, 1997). In Ghana, malting is largely a cottage industry, usually performed at home by women, and one that requires great expertise. Maltsters and brewers in most parts of Ghana are faced with challenges such as shortage of sorghum within certain period of the year, inadequate sunshine during the raining season, high price of sorghum between March and August, which affect their production levels. Malting is a tiring and tedious work which brewers have to repeat any time they want to prepare a batch of their brew. Also, the traditional techniques used for malting are ill suited to markets. The risks for human health are serious and the malt technological quality is uneven when these traditional brewers prepare their own malt.

The development of cyanogenic compounds, enterobacteria or moulds can impair the organoleptic qualities and healthfulness of sorghum malt prepared by the traditional maltsters. Quality requirements for malting sorghum are reasonably strict and are directly related to processing efficiency and product quality in the malting and brewing industries. The major quality criteria for malt are noted to be taste and presence or absence of roots in the malt. The parameters affecting malt quality were perceived to be malt production period, proportions of grain and amount of water entering the malt, presence of pesticide residues in malt grains and age of grain. The problems associated with malting sorghum include; high malting losses estimated at 10–30% as against 8–10% for barley. Sorghum malt has high gelatinization temperatures which limit starch solubilization or hydrolysis by the amylolytic enzymes during mashing is a limiting factor in malting sorghum. Sorghum malts have low extract yield or low diastatic power (DP) due to inadequate hydrolytic enzyme activities especially β -amylase. This is attributed to poor endosperm modification caused by inadequate hydrolytic enzyme activities especially β -amylase (Dufour *et al.*, 1992, Palmer,

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1989). Pito brewing is a key off-farm economic activity that provides income for numerous households particularly women in Northern Ghana. It is estimated that over 10,000 women in Northern Ghana depend on pito brewing as their main source of income (PSI-Sorghum, 2006). It has been observed that most of the pito brewers produce their own malt for brewing. Meanwhile some women entrepreneurs produce a limited amount of sorghum malt for sale to small scale brewers. Therefore, the objective of this study was to investigate the commercial potential for sorghum malt in the northern region of Ghana and to find out if small scale brewers are willing to purchase industrially prepared sorghum malt.

MATERIALS AND METHODS

Data Collection

Primary data was obtained from the field through the administration of semi-structured questionnaires as well as personal observation. The sample frame included all pito brewers and maltsters in the four districts under the study. Data collected include brewing capacity per batch of brew, the ability of the brewer to expand the business and the willingness to purchase commercial sorghum malt. The brewing capacity was measured using the five (5) litre 'frytol' gallon. The 5 litre 'frytol' gallon is the measuring material used by the local brewers to measure their brew. Nominal data was collected on their ability to expand the business and interest in purchasing commercial sorghum malt. These were tested by the use of closed question where possible answers were defined in advance for the respondents to choose. These variables were coded 'Yes' and 'No' for the respondents to choose to indicate whether they can expand their business and if they are willing to purchase commercial sorghum malt.

Data Analysis

The data obtained was analysed using descriptive statistics such as charts, means, frequency distribution tables and percentages with the aid of statistical package for social sciences (SPSS) version 16 and Microsoft excel 2007. According to Texas State Auditor's Office, Methodology Manual, review.5 (1995), descriptive statistics are recommended when the objective of the study is to describe and discuss a data set more generally and conveniently than would be possible using raw data alone. Descriptive statistics are routinely used in reports which contain a significant amount of qualitative or quantitative data. Descriptive statistics helps in summarizing and supporting assertions of facts. Furthermore thorough understanding of descriptive statistics it is essential for the appropriate and effective use of all normative and cause-and-effect statistical techniques, including hypothesis testing, correlation, and regression analysis. Descriptive statistics is essential for arranging and displaying data, make data much easier to work with, interpret and discuss than raw data. It help examine the tendencies, spread, normality, and reliability of a data set and it include useful techniques for summarizing data in visual form. Therefore it is appropriate to use descriptive statistics to analyze the data collected from these four districts.

RESULTS AND DISCUSSION

Categories of Respondents

The percentages of the various categories of respondents are shown in Table 1. Majority of the brewers (97.2 %) brew using their own prepared sorghum malt while a few (2.3 %) of the brewers purchase the malt they used for brewing. The high percentage of brewers who brew pito by preparing their own malt may be as a result of unavailable commercial maltsters since the brewers complained the process of malting is tedious and time consuming since they have to take several days to prepare the malt and thus reduce the quantity of pito they can brew. The few brewers, who brew without preparing their own malt, obtain the malt by buying from the local markets.

However, the supply of the malt at the local market is inadequate and not consistent.

Table 1. Categories of respondents

Categories	Frequency	Percent
Brewers	5	2.3
Maltster and Brewer	209	97.2
Others	1	0.5
Total	215	100

Age of Respondents and Experience in Business

The respondents' age and experience in the pito brewing industry is shown in Table 2. Ninety two percent (92%) of the respondents in the local brewing industry are in the active age group between 20-43 years. About 16.82 % of the respondents are in the business for less than six years. Majority (73.83 %) of these brewers in the industry have brewing experience of 6-20 years while few (9.35 %) of them were in the business for more the 20 years. This could be an indication that majority of the respondents have long term of brewing experience if all things being equal.

Table 2. Age of Respondents and Experience in Brewing

Period in business (Years)	Age of Respondent (Years)				
	20-25	26-31	32-37	38-43	44-49
0-5	21	15	0	0	0
6-10	6	21	19	0	0
11-15	0	12	29	19	0
16-20	0	2	28	12	10
21-25	0	0	0	9	6
26-30	0	0	0	2	3

Experience in the Local Brewing Industry and Brewing Capacity

Table 3 shows the brewing experience and the brewing capacity of respondents at the time of the study. Majority of brewers (69.62 %) have a pito brewing capacity between 91.5-180 litres per batch of brewing. Few of the brewers (18.69 %) and (11.68 %) brew below 91.5 litres and above 180 litres per each batch of brewing respectively. The result indicated that majority of the brewers that have high brewing capacity were those having brewing experience between 6-20 years and hence was the respondents within the age group of 26-43 years. It is therefore conclusive that the brewing experience and age of the brewer influence the brewing capacity.

Table 3: Experience in Brewing and Brewing Capacity

Period in Business (years)	Brewing capacity in Litres (L) / batch			
	0-90 L	91.5-135 L	136.5-180 L	181.5-225 L
0-5	10	14	8	4
6-10	10	18	10	8
11-15	20	12	24	4
16-20	-	15	30	7
21-25	-	10	3	2
26-30	-	3	2	-
Total	40 (18.69 %)	72 (33.64 %)	77 (35.98 %)	25 (11.68 %)

Respondent age Group and Williness to Expand the Brewing Business

The brewers' age group and percentage willing and not willing to expand their brewing business are shown in Figure 1. Even though factors such as financial strength, availability and cost of raw materials (sorghum), labour and demand for the product may influence business expansion, the wiliness of the brewer to expand the brewing business is also critical. Total of 95 % of the respondents are willing to expand their brewing capacity while a few (5 %) did not want to expand the brewing business. The present study indicated

that majority of the active age groups of brewers are willing to expand their business. This will therefore create market opportunities for sorghum and sorghum malt.

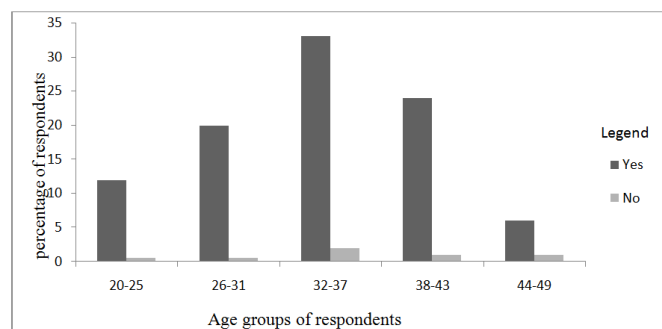


Figure 1. Respondents age and Ability to expand their Business

Prospects for Sorghum Malt

From Figure 2, 85% of the respondents across the four districts were interested in purchasing commercial sorghum malt while 15% of brewers not willing to purchase sorghum malt from the market or any firm that sell sorghum malt. Those that were willing to purchase commercial malt are of the view that, existence of firms to produce and sell sorghum malt will help in reducing their work load as malting and brewing is labour intensive, and also reduce their cost of production which will in turn increase their production capacity. However, the respondents who that did not show interest state that commercial malt may be expensive and the quality may not be guaranteed. Even though the total percentage of brewers willing to purchase sorghum malt was high for all the four districts, the highest percentages were recorded in Tamale (93 %) and Gushiegu (91 %) as compared to the percentages measured for Karaga (79 %) and Krachi-Nchumburu (78 %). This information will therefore be helpful for firms who want to produce and sell sorghum malt on large scale since it will aid in distribution if the firm is sited outside the sale point.

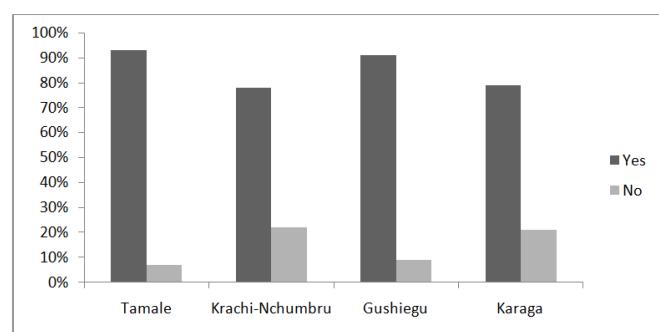


Figure 2. Prospect for Sorghum Malt in the four Districts

Brewers' age and Willingness to Purchase Sorghum Malt

Age plays a critical role as how long one can be in active business. Like the result shown in Figure 1, majority of brewers willing to expand their business were those in the age group of 26 – 43. This result correlates positively to their wiliness to purchase commercial sorghum malt as shown in Figure 3. More also since this age group of the brewers were those that have high brewing capacity, their wiliness to purchase sorghum malt is a great marketing potential for commercial sorghum malt should any firm enter into quality commercial malt production.

Conclusion and Recommendation

The marketing prospect for commercial sorghum malt in the study area is very promising. Total of 85% of the brewers interviewed were

willing to purchase commercial sorghum malt while 15 % of the respondents did not show interest in purchasing sorghum malt for brewing. Therefore establishing a firm for commercial sorghum malt production in the current study area will be a profitable business which will help to expand the small scale brewing industries as well as create job opportunities and market for sorghum producers. However, there is the need to investigate the common sorghum varieties, the qualities of the sorghum and sorghum malt preferred by the brewers before entering into commercial sorghum malt production.

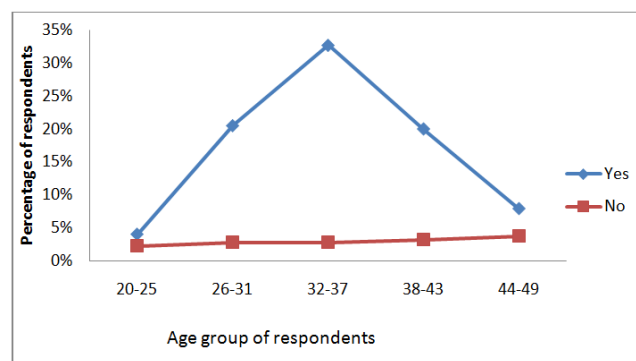


Figure 3. Age group of Respondents and Marketing Prospect for Sorghum Malt

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