

VALIDATION EXERCISE ON THE NEED FOR A ZOBO DRINK PROCESSING DEVICE

N. Aneke^{1*}, W. Okonkwo¹ A. Aneke², and A. Nwoke¹

¹Department of Agricultural and Bioresources Engineering, University of Nigeria Nsukka.

²Bursary Department, University of Nigeria, Nsukka.

email: nneoma.aneke@unn.edu.ng

Abstract Roselle drink (commonly known as *zobo* in Nigeria) is a popular beverage taken by different demographic sectors in the country. It is gotten from the hot water extraction of roselle calyces, fruits and spices. It is enjoyed by many due to its refreshing taste and exciting colour. It is known to have high nutritional and medicinal value due to the presence of vitamins and antioxidants. The process of making the drink is usually belaboured with difficulties, high risk and unhygienic practices which greatly reduces the integrity of the drink. The aim of this study is to determine if there is a need for *zobo* drink processing device A validation exercise was conducted to determine the need for a *zobo* drink processing device. A questionnaire was prepared using Google forms which consists of several questions that bordered around challenges and attitude towards the drinks and sent out for responses. About 360 people across the country and diaspora responded to the questionnaire. Results show that there is a need for a device that will produce *zobo* drinks more efficiently than the traditional way of producing *zobo* drinks. This goes to show the *zobo* industry has huge challenges which are opportunities in disguise for reserchers, industry and government.

Keywords Roselle, processsing device, preferences, validation, beverages

1. Introduction

Roselle drink popularly known as *zobo* in Nigeria is a drink highly appreciated by the people and other African countries (Adogbo & Mary, 2015). It cuts across all demography, it is suitable for different age groups. It is made from herbal extraction of its juice from roselle (*Hibiscus sabdariffa*) calyces using hot water (Tazoho et al., 2022). Roselle calyces are used as ingredients for different food products such as drinks, sauces, wines, jams, youghurt and colorants due to the

strong presence of anthocyanin (Alobo & Offonry, 2009; Cisse et al., 2009). In Nigeria, roselle drink was usually associated with poverty, but with the advent of more interesting packaging, the drink is being accepted by the elites in the country. It has lots of nutritional and health benefits due to the presence of vitamins and antioxidants such as vitamin C, anthocyanin, phenols to mention a few (Aneke et al., 2023; Diantini et al., 2021). As a result, it is used as preventive measures against diseases such as hypertension, stroke, diabetes, etc (Owolade et al., 2023). The drink is known for its refreshing taste and colour especially when prepared with fruits and spices such as pipeapples, apples, ginger, cloves and sweeteners such as sugar, honey and dates (Ronke & Olasunkanmi, 2017). One of the challenges of zobo drink processing is that the production is neither mechanized or standardized (Braide et al., 2012). Some attempts have been made by researchers to develop zobo drink processing machine (Aneke et al., 2022; Umogbai, 2015). A lot of opportunities are abound in zobo drink processing as the demand for the beverage is increasing. These opportunities in value addition to the calyces includes production of equipment for processing zobo drinks and wines, production and preservation of zobo drinks, marketing and distribution of zobo drinks and even exporting the drinks and its derivatives. The objective of this study is to conduct a validation exercise on the need for a *zobo* drink processing device commercially.

2.0 Materials and methods

A questionnaire was prepared using Google forms and sent out for responses for Nigerians living locally and in diaspora. The questions were geared at finding out their opinions about zobo drinks, their preferences and its processing. Three hundred and sixty four people answered the questions. The link to the form is <https://forms.gle/VPg6cXDzuiKLPrYg8> The sample questions are as shown below

- Name
- Gender
- What age bracket do you fall into?
- Do you like zobo drink?
- Why do you like zobo drink?
- How do you like your zobo?

- How often do you take zobo?
- If you had access to more zobo drink will you drink it more frequently?
- What is the source of zobo you drink?
- If you make zobo, what are the challenges you encounter?
- If you make zobo drink at home, what quantity do you make?
- If you buy zobo drink from sellers, would you rather drink home made zobo ?
- What do you think about an appliance that makes zobo drink at the click of a button?
- If zobo drink is unavailable, what would you rather drink?

The results were analyzed and presented in charts

3.0 Results and Discussion

3.1 Demographic distribution of respondents

As shown in figure 1, 51.6% of the responders were females and 48.4% were males. Figure 2 shows the age distribution of the responders 27.5% were between 18 to 25 years old while 45.3% were between 26 and 40 years old. 17.6% of the responders were in the range of 41 to 55 years old 9.1% were aged between 56 and 70 years old while the rest were above 70 years old.

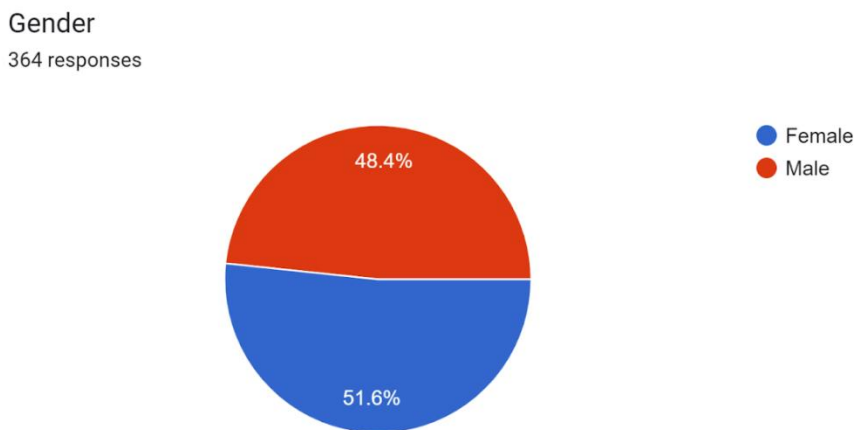


Figure 1 Gender distribution of the responders

What age bracket do you fall into?

364 responses

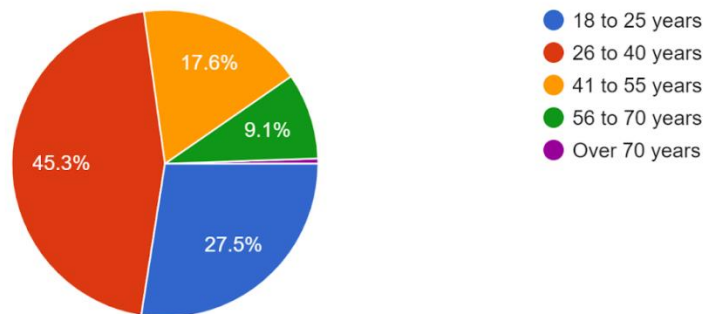


Figure 2 Age distribution of the responders

3.2 Appreciation of roselle drink

In response to the question if they liked roselle drink, Figure 3 shows that eighty nine percent of the respondents liked roselle drink while 9.1% were indifferent and 1.9% did not like roselle drink at all. This goes to show that a whole lot of Nigerians are interested in the drink.

Do you like zobo drink?

364 responses

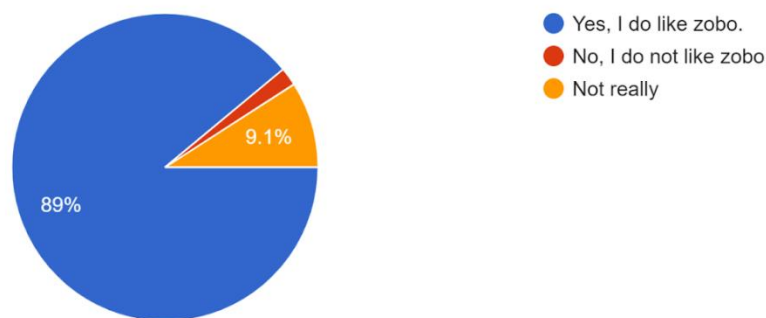


Figure 3 Distribution based on likeness

3.3 Reason for liking roselle drink

When asked why they loved roselle drink, the responders were allowed to choose as many options that were applicable to them. Figure 4 showed that 54.4% said it was due to its refreshing nature of the drink while 46.2% said that it is because it contains a lot of nutrients. 42.8% said that they loved the drink because it has medicinal attributes while 10.7% said that they loved the colour and 28.7% said that they loved it without any reason. 4% said that they just don't like the drink. A small fraction had other unique reasons why they liked the drink which still revolves around the given options.

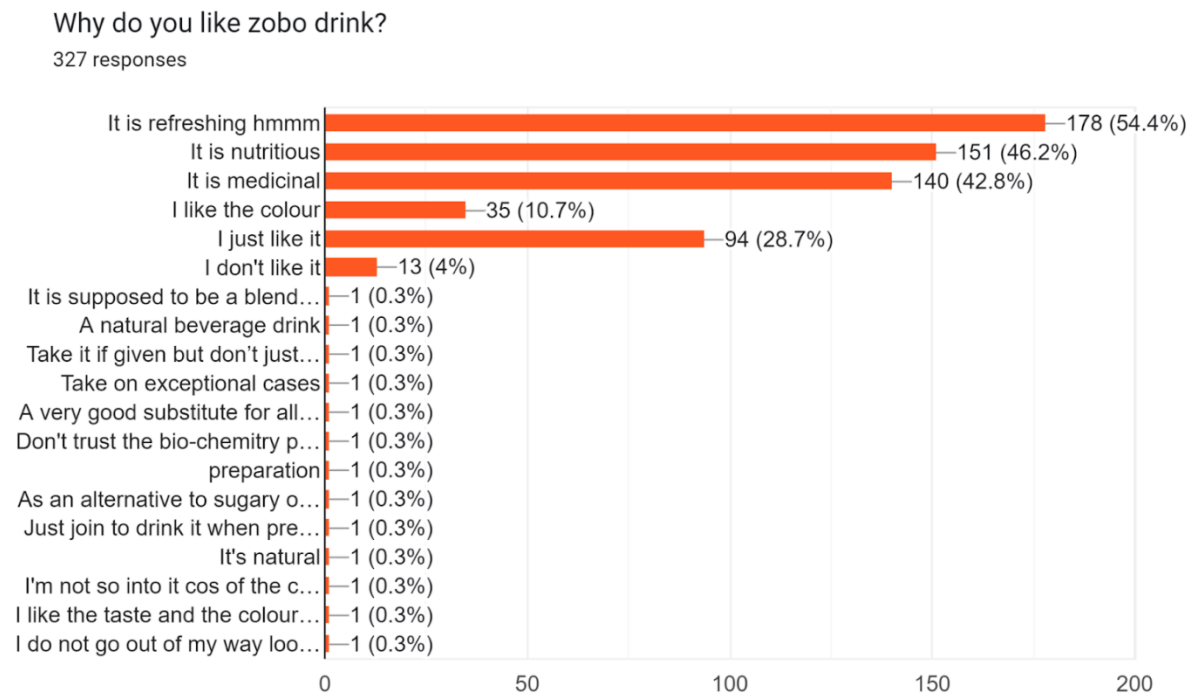


Figure 4 Reason why people loved zobo drink

3.4 Temperature preference of the drink

Most of the responders preferred the drink cold as shown in figure 5 where 86.5% preferred it cold and 8.5% were indifferent about the temperature of the drink. This shows that the drink is more appreciated as a soft drink rather than as a tea infusion. This is especially because Nigeria has hot climatic conditions and are more inclined to take drink cold rather than hot.

How do you like your zobo?

364 responses

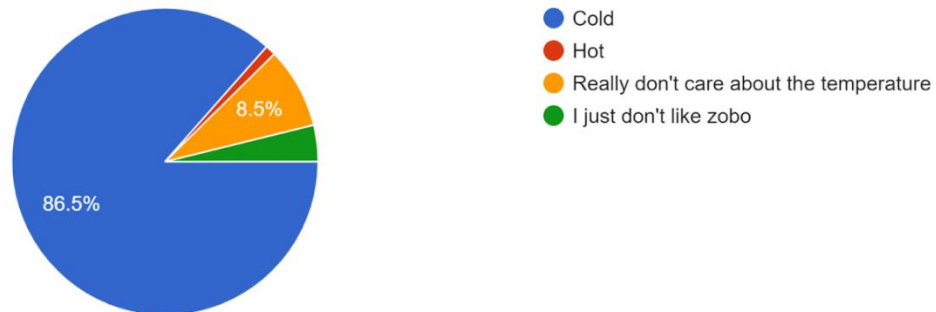


Figure 5 Temperature of zobo drink preferences

3.5 Frequency of consumption of the drink

Based on the frequency of consumption, 3.3% of the responders said that they take the drink everyday while 14% take the drink about 1 to 4 times weekly. 51.4% of said 1 to 4 times monthly while 27.7% said that they do not have access to the drink. The huge percentage that does not have access to the drinks shows that there is an availability challenge.

How often do you take zobo?

364 responses

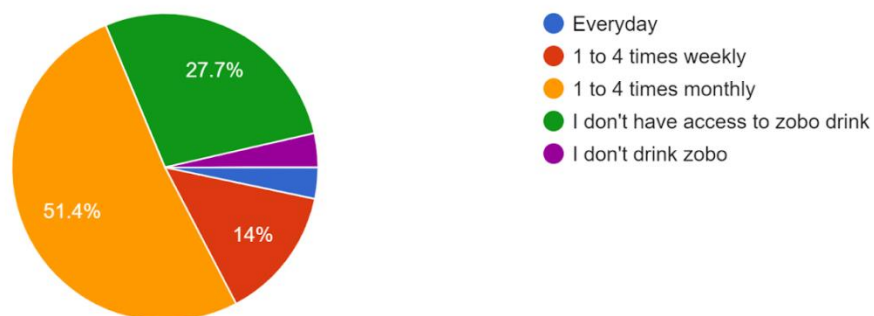


Figure 6 Frequency of consumption of zobo drink

3.6 Need for increased frequency of roselle drink

When asked whether they would increase the frequency of consumption of the drinks if there was more access to the drinks, 66.7 % said that they would increase the frequency of consumption while 22.7% said that they were comfortable with their frequency of consumption as shown in Figure 7. This data shows that there is a huge need or deficit in the zobo drink industry. People need the drink but do not have access to well-prepared zobo drink.

If you had access to more zobo drink will you drink it more frequently?

321 responses



Figure 7 Frequency of consumption based on accessibility of the drink

3.7 Source of roselle drinks

When asked about the sources of their roselle drinks, responders were allowed to choose as many options as are applicable to them. Figure 8 shows that 71.2% of the responders preferred the drinks made in their homes, while 39.8% bought from vendors and 22.8% take roselle drinks at events and parties. This data shows that roselle drink consumers have trust issues with drinks produced outside their homes where they don't know the hygienic conditions with which it was produced.

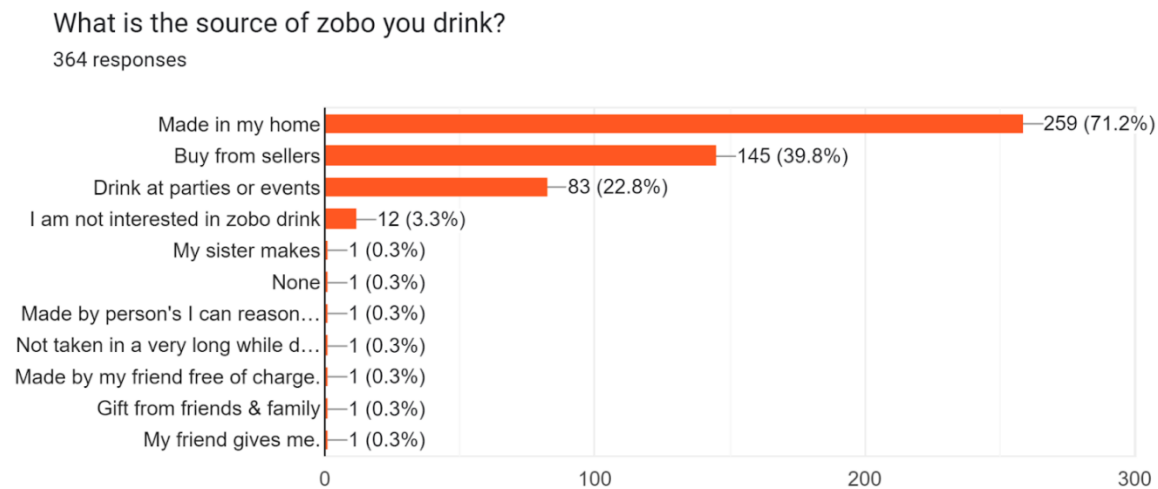


Figure 8 Source of zobo drink

3.8 Challenges encountered during roselle drink processing

The challenges usually encountered during zobo drink production are enormous. Figure 9 shows that 19% said that it takes time while 17% has a fear that the drinks will be contaminated during the course of its processing. 11.3% said that there is the fear of hot liquid scalding on the producer while 16.8% said that it makes the environment untidy. 29.4% said that they have no idea how to make zobo drink. Some respondents still had other reasons which still revolved around the given options.

If you make zobo, what are the challenges you encounter?

364 responses

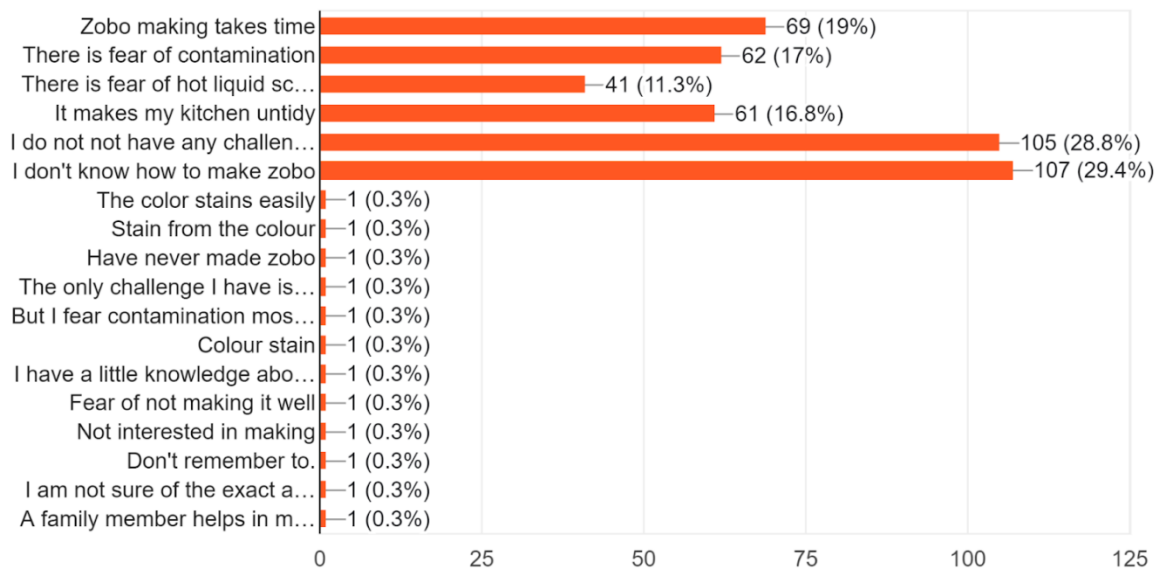


Figure 9 Challenges encountered during zobo drink production

3.9 Quantity usually produced at home

Figure 10 showed that 29.1% Of the responders produce less than 4 liters of roselle drink at a time while 39.3 % produce about 5 to 10 liters per batch. 25.3% said that they don't make zobo drink at home.

If you make zobo drink at home, what quantity do you make?

364 responses

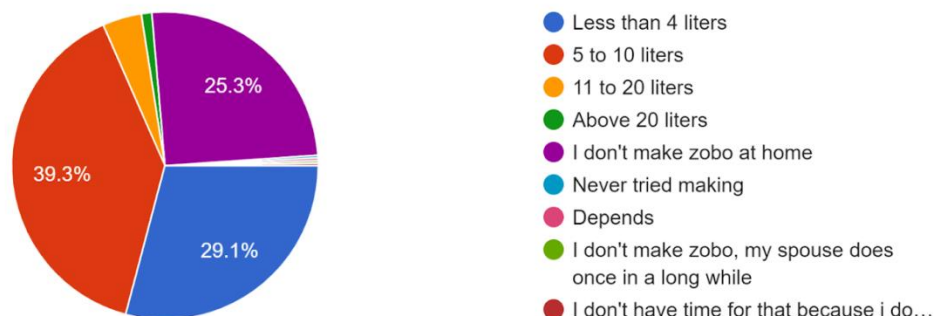


Figure 10 Quantity of zobo drink produced at a time

3.10 Preference of source of roselle drink

Figure 11 showed that 81.5% of the responders would rather drink home-made roselle drink than from vendors. This stems to the fact that people want to be in control of the hygiene of production and quality of the materials being used for the production of the drinks. About 14.9% said that they are indifferent to the source of the zobo drink.

If you buy zobo drink from sellers, would you rather drink home made zobo ?

363 responses

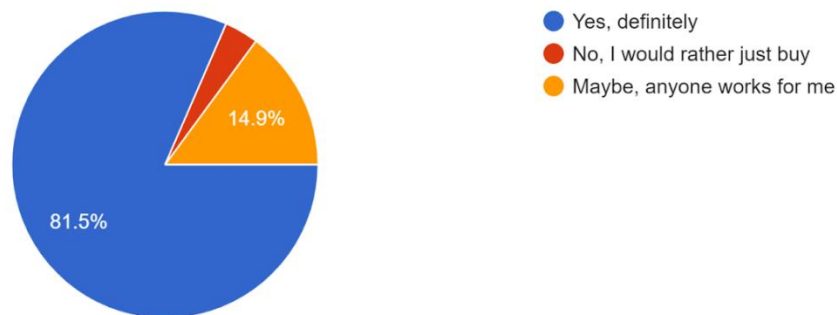


Figure 11 Preference on source of zobo drink

3.11 Need for a roselle drink making appliance

As shown in figure 12, 71.7% of responders would love an appliance that would make zobo at the click of a button while 17% really would not mind the appliance while 11.3% will be indifferent as to the existence of such an appliance. The high number of the responders that will prefer to have such an appliance shows the huge need for it. This appliance should be able to cut off the risk of safety and hygiene and also save time for the producer of the drink.

What do you think about an appliance that makes zobo drink at the click of a button?

364 responses

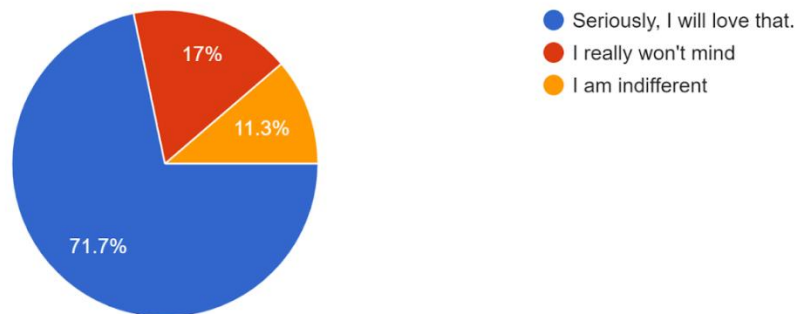


Figure 12 Appliance that makes zobo

3.12 Substitutes for roselle drink

In the absence of zobo drink, Figure 13 show that 15.1% would rather take carbonated soft drinks while 9.3% would rather consume packaged juice. 29.4% opted for plain water while the highest percentage went to tiger nut drink. This goes to show that people are becoming more intentional about the quality of what they consume into their bodies. People are more interested in healthier options of the beverages that they take.

If zobo drink is unavailable, what would you rather drink?

364 responses

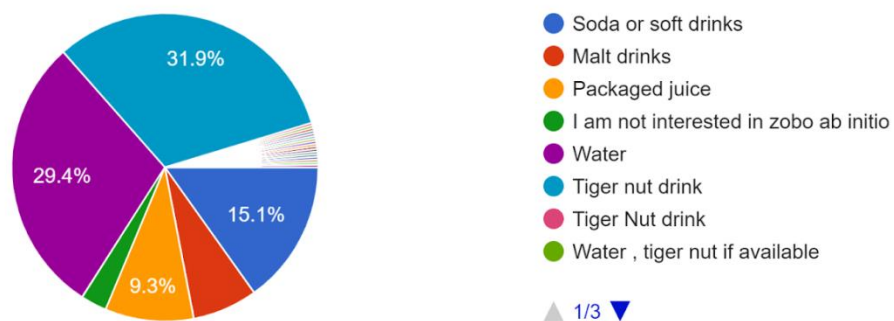


Figure 13 Competing beverage

4 Conclusions and Recommendations

Roselle drink is a very acceptable soft drink in Nigeria across different demographic sectors. The roselle drink industry is a growing one and there are enormous challenges associated with the process. This has led to a huge market gap in the roselle drink industry. These challenges encountered are opportunities that are available for researchers, industries and the government. The increasing need for the drink is as a result of peoples need for healthier living. Women are more likely going to be involved in the processing of zobo drinks. This is why it is important that attention is paid to enhance the quality of the process of zobo making thereby empowering the women involved in the entire process from production to preservation to packaging and distribution and marketing.

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