

## **Workshop Summary: Consumer sensory research in Africa - the African countries profiles project**

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## **Abstract**

A workshop, organized by the Africa Network for Sensory Evaluation Research (ANSWER), was presented during the virtual 14th Pangborn Symposium in August 2021. The purpose of the 60 min workshop was to introduce ANSWER's African Countries Profiles (ACP) project to the global sensory community. The long-term ACP project aims to leverage research about the sensory properties of products on the continent by highlighting opportunities and challenges when planning and conducting consumer research in African countries. A link to the open-access online "Guidelines for planning consumer testing in African countries" publication was made available to participants prior to the meeting. During the workshop a brief introduction of the ACP project and a case study featuring consumer testing in Ethiopia was presented. Workshop participants joined one of four online meeting rooms where different topics were discussed. The workshop concluded with a short feedback session in the main room and closing. The workshop provided an opportunity to identify the value and limitations/gaps of the information in the guideline document in order to optimise the ACP information and develop the discipline of Sensory and Consumer Science on the African continent.

**Key Words:** Consumer research, Testing, Foods, Sensory properties, African Countries Profiles

## ***1. Introduction***

According to the United Nations estimates, the African continent is home to almost 1.4 billion people, i.e. about 17 % of the world population (Worldometer, 2021). The population is young (median age 19.7 years), about 44 % reside in urban areas and the consumer market is rapidly increasing. The United Nations recognizes 57 countries or dependencies in Africa and 1500 to 2000 different languages are spoken (Nations Online, 2021). There exists similarly a wide variety of traditional beliefs and religions with major influences on culture and philosophy. However, Africa is an under explored and under researched market for sensory and consumer scientists.

The Africa Network for Sensory Evaluation Research (ANSWER) was founded in 2019 at the 13<sup>th</sup> Pangborn symposium in Edinburgh, Scotland. ANSWER is an association that aims to build capacity, to transfer knowledge and skills, and to help sensory and consumer science researchers in African countries to adapt and apply global best practice principles to the specific circumstances and challenges faced in Africa's product value systems. The idea of ANSWER was born during the welcome session of the 5th Pangborn symposium (2003) in Boston, USA. The current Chair of ANSWER, Riëtte de Kock from South Africa, attended the event. At the time, delegates were welcomed from various parts of the world, the Americas, Asia, Australia and Europe but delegates from Africa were not mentioned. Africa did not feature on the sensory world map. At a later Pangborn symposium in Florence, Italy, the organisers specifically mentioned that sensory and consumer scientists should focus more effort on the needs of the developing world (Tuorila & Monteleone, 2009) (including Africa). It was time for Sensory and Consumer Science researchers from the African continent, although few at the time, to play a more prominent role. ANSWER is now represented by an executive committee consisting of scientists from east, west and southern African countries; a website for the network was recently launched [www.answernetwork.org](http://www.answernetwork.org) and membership options developed. While network activities were slow to gain momentum due to the Covid pandemic, there is much enthusiasm for collaborative projects and training opportunities.

Towards development of Sensory and Consumer Science in African countries, ANSWER initiated the African Countries Profiles (ACP) project in 2020. The long-term ACP project aims to leverage research about the sensory properties of products on the continent by highlighting

opportunities and challenges when planning and conducting consumer research in African countries. The ambition is to collaborate with in-country representatives to compile information that researchers and students can use to help them when planning product testing considering the diversity of conditions in the different countries in Africa. The plan is an online, open access, easy-to-use guide document. This first edition of the APC Consumer product testing across countries in Africa (ANSWER and InnoFoodAfrica, 2021) will contain information about Ethiopia, Kenya, South Africa, and Uganda. These countries are the focus of the InnoFoodAfrica project ([innofoodafrica.eu](http://innofoodafrica.eu)) - a European Commission-funded, multi-partner consortium project that seeks to enhance the sustainability and healthfulness of diets and food value systems in Africa. The document is loosely based on a publication *International Consumer Product Testing Across Cultures and Countries* of ASTM (ASTM, 2007) and will be updated continuously to include new information and more countries.

A workshop, organized by ANSWER, was presented during the virtual 14th Pangborn Symposium in August 2021. The purpose of the 60 min workshop was to introduce the ACP project to the global sensory community. Workshop participants could access the “Guidelines for planning consumer testing in African countries” publication via a link provided in the abstract of the workshop. The link to the guideline was provided to serve as insight and background for the participants so that they could actively discuss issues of planning and conducting consumer tests in African countries.

## ***2. The workshop***

The workshop was attended by 307 delegates and the recording of the workshop was viewed afterwards (up to December 2021) by an additional 19 different users. During the 60 min online workshop using the Zoom platform, participants were welcomed and a brief introduction of ANSWER and the ACP project were presented by vice-chair, Dr Maame Yaakwaah Blay Adjei. She also introduced the case study featuring a request for consumer testing of a typical Ethiopia snack product namely *Dabo Kolo* and explained the procedures to be expected for the discussions in the break-out rooms. The case study was provided so that participants could discover how the information in the Ethiopia country profile chapter (ANSWER and InnoFoodAfrica, 2021) could be used when planning a consumer product test in that country. It highlights issues and practicalities that may be important to understand when planning and

executing consumer product tests. Consideration is given to language, socio-cultural, literacy and education issues, suitable test methods, questionnaire design, and other practical aspects when running tests.

*The case study:*

*An international flavour company wants to expand their business in Ethiopia. The company identified the popular snack Dabo Kolo as a vehicle for selling flavourings. The company plans to do a consumer test of Dabo Kolo with four different cheese flavours in the urban market.*

Dr Abadi Gebre Mezgebe from Ethiopia presented a background on the type of information that one can expect to find in the online ACP document and specifically the chapter about Ethiopia. The workshop focused on consumer testing in Ethiopia since it is a good example to showcase the extreme diversity in terms of political, socio-cultural, demographic and language issues to be expected in many African countries.

*Ethiopia*

In his opening comments, Dr Mezgebe asked participants to write the first word that came to mind when thinking about Ethiopia in the chat box. This was done in order to gauge initial thoughts and perceptions of the participants about the country and as an ice-breaker. Figure 1 presents a word cloud generated using XLStat (Addinsoft, New York) of the 28 words/concepts mentioned by 59 participants. In the word cloud, the word *coffee* that was mentioned most frequently appears in the center in a large font size, while the words mentioned at a lower frequency appear in smaller font sizes. The colors used in the word cloud are essentially for aesthetic value reflecting colors of the Ethiopian flag. The next 10 minutes were used to briefly highlight interesting information about Ethiopia (see Figure 2 for examples) in order to entice participants to engage with the ACP material.

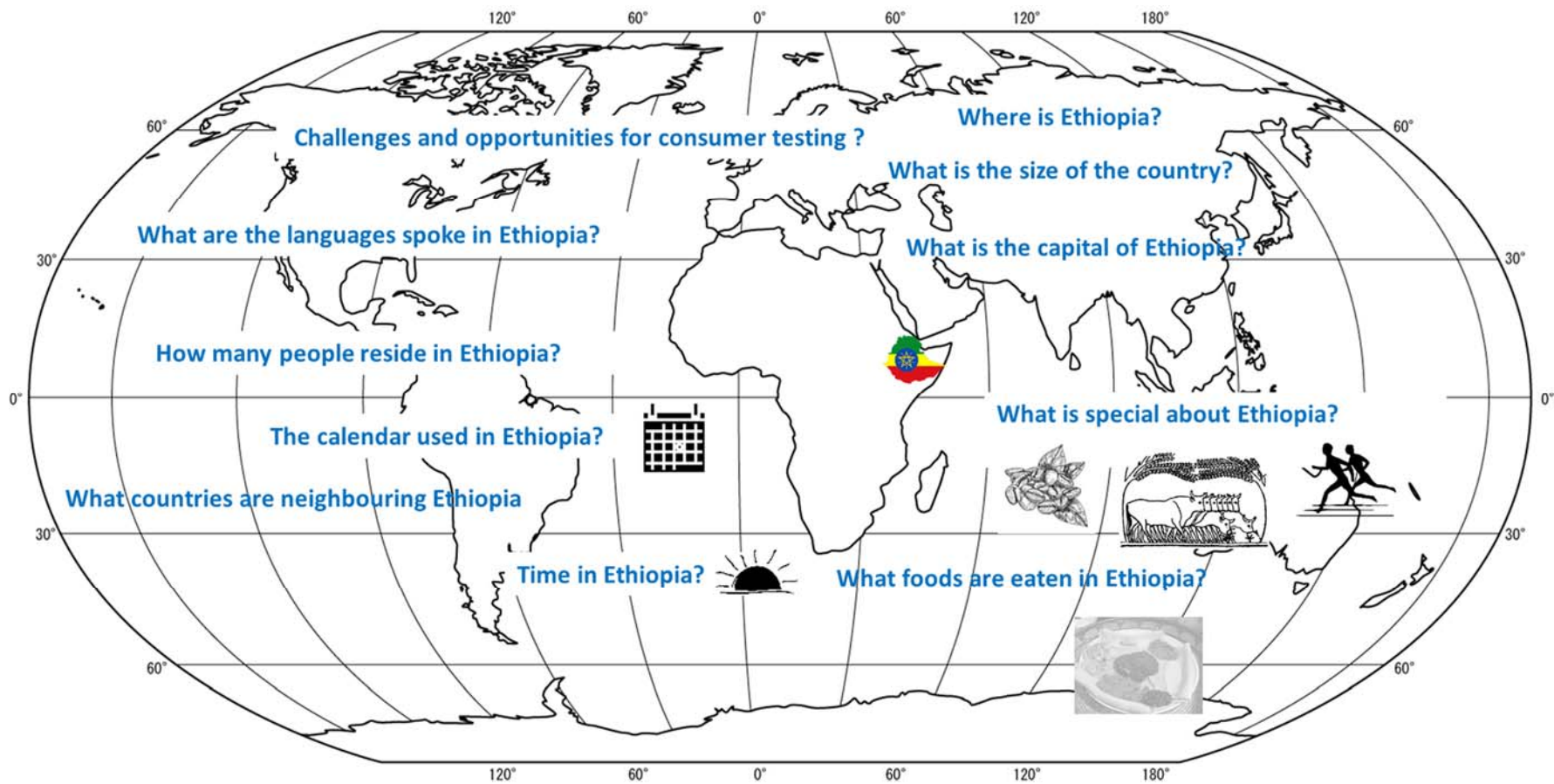
Ethiopians identify themselves according to foods selected and consumed (Kifleyesus, 2007). However, detailed descriptions of the preparation and socioeconomic and cultural roles of many commonly consumed Ethiopian cultural foods and drinks are not well-recorded and/or documented in scientific literature (Mohammed, Seleshi, Nega, & Lee, 2016). Cultural diversity is the unique feature of Ethiopia; the country's population is composed of more than 80 ethnic groups whose cultures are very diverse. Each ethnic group has its own culture manifested in

widely practiced dietary patterns (national foods), ways of living, celebrations, dress codes and dances and the intertwining of the cultural fabric is still developing (Kebede, 2010). Ethiopia's varying religious beliefs play a significant role on the consumption of meat products and other sources of animal-derived foods. The habits and customs of the groups influence the patterns of meat consumption in the country (Seleshe et al., 2014).



**Figure 1.** Word cloud illustrating the words and concepts that participants mentioned during the workshop when asked to write: *What comes to mind when thinking of Ethiopia?* (n=59 participants contributed a word/concept)

Common Ethiopian foods include *dabo* (Ethiopian home-made bread), *hambasha* (bread from northern Ethiopia), *kitta* (unleavened bread), *injera* (thin flatbread normally made with teff), *nifro* (boiled whole grains), *kolo* (roasted whole grains), *Dabo Kolo* (round seasoned baked dough) and *kinche* (crushed kernels, cooked with milk or water and mixed with spiced butter) (Sall et al., 2019). Details of the product *Dabo Kolo* and its significance in Ethiopian society were provided to give participants some context of the case study.



**Figure 2.** Examples of the information on Ethiopia that was shared during the workshop

### *Dabo Kolo*

*Dabo Kolo* are small size, crunchy, spicy roasted/baked bread dough snacks (Kiflie et al., 2018), and somewhat similar to German pretzels (baked pastry made from dough that is commonly shaped into a knot). *Dabo Kolo* is an Amharic word (*Dabo* is bread, and *Kolo* is the word for roasted grain/dough). It is traditionally prepared at home during holidays or for serving during other special gatherings (e.g. religious and social ceremonies, and discussion forums) (Gelata and Grausgruber, 2013). Furthermore, *Dabo Kolo* is used by long-distance travelers since it can be used as shelf stable snacks. *Dabo Kolo* is a traditional food prepared in the time of war and long trips (Maru, 2020). It is often eaten as a snack with coffee and served at meetings and conferences. *Dabo Kolo* is also popular in Eritrea and the Democratic Republic of the Congo.

For the preparation of *Dabo Kolo* (Figure 4), the wheat flour, water and oil are thoroughly mixed (Table 1), and the dough left to ferment for some time (Gelata and Grausgruber, 2013). Sugar is added to make it sweet or other spices depending on the flavor required. The partially fermented dough is rolled to a thin rod-like shape and cut into smaller pieces as desired. The dough pieces are roasted on a heated clay or metal pan to make the *Dabo Kolo* (Figure 3).



**Table 1.** An example of a typical recipe for *Dabo Kolo*

No.	Ingredients	Amount
1	Wheat flour	500 g
2	Water	150 ml
3	Salt	1 g
4	Sugar	25 g
5	Oil	60 ml
6	Spices mix / Berberie (optional)	9 g
7	Milk (optional)	50 ml

Source: The Foreign Fork (2021)

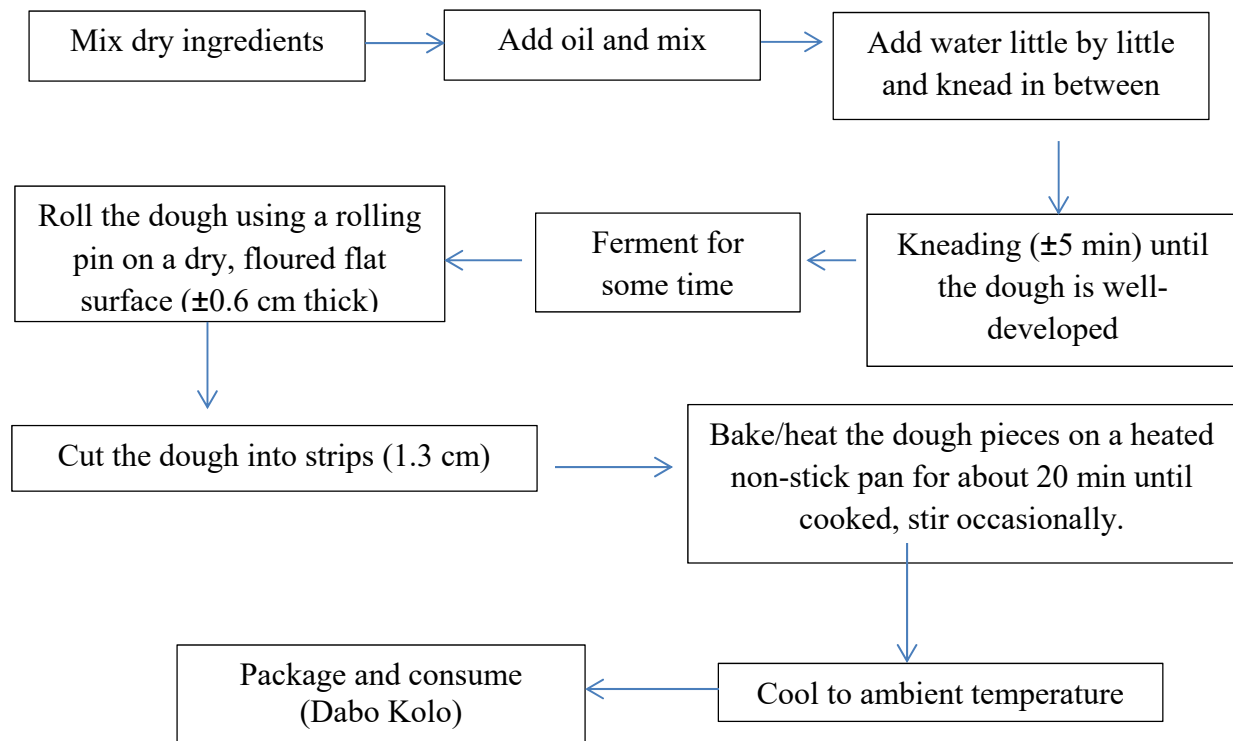


A



B

**Figure 3.** *Dabo Kolo* (A – Sweet & large in size; B – Spiced/flavored & small size)



**Figure 4.** *Dabo Kolo* production (The Foreign Fork, 2021, Gelata and Grausgruber, 2013).

#### *Discussions in breakout rooms*

Participants were free to join any one of the four breakout rooms for 30 min discussion sessions led by moderators.

- **Breakout room 1:** Where and when would you plan the consumer test of cheese flavoured dabo kolo? (City or town, day of the week, time of day)? Why? (Table 2)
- **Breakout room 2:** What aspects would you need to consider when recruiting consumers to participate in the test in Ethiopia? (Table 3)
- **Breakout room 3:** Propose a hedonic scale/method for collecting quantitative data on acceptability of the flavoured Dabo Kolo snacks from consumers with low literacy skills in Ethiopia. (Table 4)
- **Breakout room 4:** Reflecting on similarities and differences of planning a consumer test from your own experience and what you will need to consider in Ethiopia? (Table 5)

The topics in Tables 2-5 were discussed based on the information presented in the online chapter for Ethiopia. Although the discussions in the main room were recorded, it is worth noting that the discussions in the breakout rooms could not be recorded with the Zoom platform. The workshop concluded with a short feedback session in the main room and the closing.

**Table 2** Discussions related to planning the consumer test of cheese flavoured *Dabo Kolo* in Ethiopia (Breakout Room 1).

<b>Factor to consider</b>	<b>Question asked during discussion</b>	<b>Contributions and comments from participants</b>	<b>Facts about consumer testing in Ethiopia from ACP</b>	<b>Interpretation of participants' responses</b>
The place/city/ town	What will be the appropriate place/ city/ town for testing the product?	<ul style="list-style-type: none"> <li>Densely populated areas could be selected for such a test e.g. transportation centers – bus station, airport, ceremonies, festivities, urban markets.</li> <li>The capital city, Addis Ababa</li> </ul>	<i>Dabo Kolo</i> is a common snack in Ethiopia (Gelata and Grausgruber, 2013).	<ul style="list-style-type: none"> <li><i>Appropriate place for testing the product is in a densely populated place, city, and/or town (e.g. Addis Ababa )</i></li> </ul>
Day of the week for testing	What will be appropriate days of the week for testing the product?	<ul style="list-style-type: none"> <li>During weekends or non-fasting period.</li> <li>Fasting days, holidays and religious days should not be considered for testing such a product.</li> </ul>	If the product contains dairy note that some Ethiopians will not eat any animal-based foods during fasting days (Seleshe et al., 2014). Wednesdays and Fridays are fasting days for these groups of consumers.	<ul style="list-style-type: none"> <li><i>Suitable days: non-fasting periods; less busy days (Sunday, Monday, Tuesday, Thursday, Saturday)</i></li> </ul>
Time of the day	What will be an appropriate time of the day for testing the product?	<ul style="list-style-type: none"> <li>Ethiopian consumers will not compromise business time unless compensated.</li> <li>Testing of a product has to be done during break times.</li> <li>Lunch time, coffee time</li> </ul>	At the close of the business day, many people are in a hurry to get home and may not be interested in participating in product testing activities	<ul style="list-style-type: none"> <li><i>The right time for testing such product is during break hours during business days</i></li> </ul>

**Table 3** Discussion related to recruitment of consumers for a consumer test of *Dabo Kolo* in Ethiopia (Breakout Room 2).

Aspect to consider	Questions	<i>Contributions and comments from participants</i>	<i>Facts about consumer testing in Ethiopia from ACP</i>	<i>Interpretation of participants' responses</i>
The target market	<ul style="list-style-type: none"> <li>• What is the profile (gender, age range etc.) of the target consumer market for the product?</li> </ul>	<ul style="list-style-type: none"> <li>• A product for a wide range of age groups (e.g 10 – 60 years)</li> <li>• All genders</li> <li>• Snack to consume while travelling</li> <li>• Snack with coffee break</li> <li>• Dabo kolo is a product that mothers often make together with children.</li> <li>• Urban market focus</li> </ul>	Most people consume Dabo Kolo except very young children. Urban consumers have better understanding of nutritional, and health aspects of food.	<ul style="list-style-type: none"> <li>• <i>The target consumer of the product is a wide range ages (mostly 10-60 years), consumers with this age group and all gender can be considered.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• Which segment/s of the target market will be interested in a cheese flavoured version of the product?</li> </ul>	<ul style="list-style-type: none"> <li>• Small amount of the milk produced is processed in Ethiopia (e.g. fermented milk (<i>ergo</i>), curd milk with partially removed whey (<i>ititu</i>), a cottage cheese-like product (<i>ayib</i>), butter and cream.</li> </ul>	Production and consumption of cheese is not well-known in Ethiopia (Keba et al., 2020). Only a small percentage of milk produced are processed into dairy products e.g. cottage cheese.	<ul style="list-style-type: none"> <li>• <i>Consumers of fresh dairy products e.g. cottage cheese consumers might be interested.</i></li> <li>• <i>Consumers of animal sourced foods could be interested.</i></li> </ul>
	<ul style="list-style-type: none"> <li>• Are there any dietary restrictions towards consuming</li> </ul>	<ul style="list-style-type: none"> <li>• Dietary restrictions for animal-based foods/dairy products are</li> </ul>	During fasting there are restrictions for consumption of dairy products and	<ul style="list-style-type: none"> <li>• <i>Many consumers are not familiar with cheese.</i></li> <li>• <i>Many will not consume products</i></li> </ul>

	cheese/dairy based flavours?	common socio-cultural aspects in Ethiopia.	animal sourced foods.	<i>with cheese/dairy during fasting days.</i>
	<ul style="list-style-type: none"> <li>Which segment of consumers will have purchasing power for the product?</li> </ul>	<ul style="list-style-type: none"> <li>Urban working class consumers</li> </ul>	Economic class to be studied for consumer research	<ul style="list-style-type: none"> <li><i>Focus on urban working class</i></li> </ul>
	<ul style="list-style-type: none"> <li>How many participants would be required to test the product options to gain a reliable opinion about the product potential?</li> </ul>	<ul style="list-style-type: none"> <li>As is normal for consumer tests</li> <li>Consider the budget</li> </ul>		<ul style="list-style-type: none"> <li><i>Minimum of 50 panelists and preferably more based on the budget available.</i></li> </ul>
Mode of recruitment	<ul style="list-style-type: none"> <li>Assuming that the interest in cheese flavoured <i>Dabo Kolo</i> would be focused on the urban market, who is available, when? – schedules, time of day, fasting days</li> </ul>	<ul style="list-style-type: none"> <li>In Ethiopia news about a tasting experiment will spread verbally.</li> <li>Field workers could be hired to recruit participants</li> <li>Social media can be used</li> </ul>	Options of recruitment as in ACP (ANSWER and InnoFoodAfrica, 2021).	<ul style="list-style-type: none"> <li><i>Field workers (e.g. students) to recruit participants</i></li> <li><i>Announcements on social media (LinkedIn, ResearchGate, Twitter, Facebook, Imo, Telegram, IMO, Instagram &amp; others) &amp; verbally</i></li> </ul>
Literacy, language and level of education	<ul style="list-style-type: none"> <li>What are the best ways to recruit consumers for the task?</li> </ul>	<ul style="list-style-type: none"> <li>In the urban market, low literacy will not be a major problem</li> <li>Observation trials (observation to research education of consumers) can</li> </ul>	Only 52 per cent of adults (15 years and older) in Ethiopia are considered literate. About 70 % of the urban market is literate.	<ul style="list-style-type: none"> <li><i>Recruit consumers that can manage and self-complete a questionnaire</i></li> <li><i>It is important to explain to consumers in their mother tongue why their</i></li> </ul>

		<p>easily be done.</p> <ul style="list-style-type: none"> <li>Assess the level of education of participants.</li> </ul>		<p><i>inputs are needed.</i></p>
Ethics	<ul style="list-style-type: none"> <li>For commercial product test, ethics approval is normally not necessary.</li> <li>Important to inform consumers about product ingredients, time expectations, incentives if any.</li> </ul>	<ul style="list-style-type: none"> <li>Participants sign up as volunteer evaluators.</li> </ul>	<p>Consent forms and informed consent are required. Approval to conduct research with human subjects in Ethiopia requires an application submitted to the ethics committees of respective government agencies</p>	<ul style="list-style-type: none"> <li><i>Participants must participate voluntarily</i></li> <li><i>Participants must be informed about and understand the ingredients and the product.</i></li> <li><i>Respect the rights of consumers to information</i></li> <li><i>Protect participants from harm</i></li> </ul>

**Table 4** Discussion of suitable hedonic scales/methods by the participants in Breakout room 3

<b>Questions asked</b>	<b>Contributions and comments from participants</b>
<p>What will be an appropriate method for collecting quantitative data on acceptability?</p>	<p>Ethiopia has a large percentage of low literate consumers. A simple method of collecting data would be helpful. The traditionally used hedonic scale is not validated for use with consumers in Ethiopia.</p> <p>Participants suggested the following:</p> <ul style="list-style-type: none"> <li>- A choice task, like ranking</li> <li>- A scale with emojis e.g. a 5-point emoji scale</li> <li>- Use of non-verbal scales, e.g. face images displaying liking/disliking, but it could be important that the images reflect               <ul style="list-style-type: none"> <li>o Ethiopian consumers rather than emojis?</li> <li>o Consider the familiarity of respondents with and use of emojis</li> </ul> </li> <li>- Coding samples with different colours rather than 3-digit numbers</li> <li>- A limited 3-point scale</li> <li>- Consider serving samples sequentially monadic.</li> <li>- Serve monadically and ask each time if a consumer would like to try the product again</li> <li>- A 5-point scale using stars,               <ul style="list-style-type: none"> <li>o 1 star is dislike extremely and 5 stars reflect like extremely.</li> <li>o Star ratings are intuitive.</li> </ul> </li> </ul>
<p>What will have to be considered in developing hedonic scales/methods for collecting quantitative data on acceptability?</p>	<ul style="list-style-type: none"> <li>• Emojis are tricky as it can have different meanings in different cultures.</li> <li>• Cultural aspects are important and should be considered.</li> <li>• There is limited evidence of using hedonic scales/methods for collecting quantitative data for testing such products in Ethiopia.</li> <li>• The five pointer validated Self-Assessment Manikin (SAM) (Bradley et al., 1994) may be a useful option to try. This scale measures the pleasure, arousal, and dominance related in response to a product (Geethanjali et al., 2016).</li> </ul>



**Table 5** Key points of the discussion in breakout room 4 on the similarities and differences of planning a consumer test in Ethiopia compared to your (participants’) own country

Questions asked	Contributions and comments from participants
<p>What are the similarities of planning a consumer test in Ethiopia compared to your own country?</p>	<p>Participants who had done testing in other developing countries shared experiences that they considered similar:</p> <ol style="list-style-type: none"> <li>1. Developing the recruitment guide and screeners</li> <li>2. It is important to have a local partner or contact, e.g. NGO to work with as these can provide valuable guidance and insight.</li> <li>3. Be mindful of the use of language to optimize understanding and reliability of responses.</li> <li>4. Consider methods such as observations and interviews</li> <li>5. Important to use interviewers that are familiar with and look like the target consumers.</li> <li>6. Ethics considerations</li> <li>7. For sensory to be sustainable, we need not be so rigid about our methods and approaches. The principles should be the core while the methods may evolve. E.g. do we still need to use 9-point hedonic scale for every consumer test? Maybe we should embrace more qualitative studies, particularly in Africa.</li> </ol>
<p>What are the differences in planning a consumer test in Ethiopia and your own country?</p>	<p>Participants who found the information from the ACP on Ethiopia considered these differences</p> <ol style="list-style-type: none"> <li>1. It is important to understand the consumer journey and retail journey, knowing that these differ in different places.</li> <li>2. Low literacy was equated with testing with children based on one person’s experience but adults are not the same as children.</li> <li>3. The social setting of the test is important to consider</li> <li>4. Consider tribal influences and sensitivity to the foods. Some tribes might not engage with the foods because of such sensitivity.</li> </ol>

### ***3. Conclusions***

Although the discussions in the breakout rooms were short it showed that having a document like the country profile can be useful to help companies, industries and researchers to identify conditions for product testing in a new location. Participants discussed very interesting issues to consider when conducting consumer product testing in a very diverse environment. This paper described an attempt to discuss considerations and complexities when planning consumer testing of food products in a new cultural context. The methods employed should complement consumers' or participants' socio-cultural, traditional, dietary and ethical norms, their level of education, literacy, and language proficiency. Timing and location of product testing could influence the validity and reliability of the data generated from study. The country profile document can fill some gaps but will also require regular and dynamic updating as more information becomes available. It could also identify research priorities for the future.

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**Author contributions:** **HLdK** Visualization of the workshop, Writing – review & editing; **JM** Workshop moderation, writing; **GO** Workshop moderation, writing **MK** Workshop moderation, writing; **MYBA** Workshop planning and management, moderation, writing – review & editing; **AA** Workshop moderation assisting, writing; **AGM** Workshop planning and management, Writing first draft, review and editing.

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