International Journal of Management, Entrepreneurship, Social Science and Humanities, Specific Issue: Vol. 6 No. 1 (2023)
https://doi.org/10.31098/ijmesh.v6i1.1338

Check for updates

Research Paper

Taste Perception from Jamu Drinks Color for Younger Generation by using Photo Products

Andreas Kurniawan[1], Yasraf Amir Piliang[2], Agung Eko Budiwaspada[3]
[1,2,3] Institut Teknologi Bandung, Indonesia

Received : February 7, 2023	Revised : April 12, 2023	Accepted : April 14, 2023	Online : May 6, 2023

Abstract

Jamu is a traditional herbal drink from Indonesia that has been inherited from generation to generation. Jamu drinks have a variety of recipes since their ingredients are derived from a combination of typical Indonesian spices that can be obtained in local markets. Previously, jamu was frequently associated with a bitter taste, but due to improvements and innovations, it may now adapt to the preferences of the younger generation. Moreover, modification of a recipe's look involving different hues may cause consumers to speculate about its taste. This study examines taste perception from the Indonesian traditional herbal drinks "jamu" color for the younger generation by using photo products image. The research method was conducted through experimentation by using a questionnaire and forum discussion in 2 phases on 111 visual communication students with an average age of 21.7 years. Results: white, red, blue, and yellow colors were preferred by the majority of participants, followed by orange and brownish-red colors, which were still mostly acceptable. However, brown and green were perceived as the colors that participants disliked the most. Based on the result of this experiment, it can be concluded that human perception of color and taste can also be applied to traditional herbal medicine; this result supports the innovative exploration of jamu recipes that can adapt to the tastes of the younger generation. The result of this study shows that perception is influenced by previous experience; several times, the data showed significantly that colors such as milk or common fruit juice would be perceived the same as the taste of jamu. Furthermore, these findings strengthen various previous studies that the color will be able to make humans perceive its taste; although sometimes the perception is wrong, it can be used as an important reference for industries. In addition, the results of this study also show that the perception of color can be done without the need to see the product directly.

Keywords: *Perception; Taste; Color; Jamu Drinks*

INTRODUCTION

Jamu is a traditional Indonesian drink that is believed to have existed since a long time ago. In the 8th century, based on relief from the Borobudur temple, there was evidence of the comprehensive processing of plants, which were then consumed or applied to the skin (Anandajoti, 2020). Jamu is a traditional herbal medicine made in Indonesia. Jamu comes from the ancient Javanese language, *jampi* or *usodo*, which means healing by using medicinal herbs or prayers. *Jampi* is often found in the Serat Centhini and Serat Kawruh jampi-jampi Jawi. The word *jampi*, which in the Indonesian dictionary means "several words or sentences that are read to bring about magical powers". Currently, jamu is no longer centered on the Java region only; among others, there are Aceh Jamu, Padang Jamu, Palembang Jamu, Sundanese Jamu, Madura Jamu, Bali Jamu, and Papua Jamu. Furthermore, jamu is one of Indonesia's cultural heritages with so many benefits, but it has not caught the interest of many people, especially among the younger generation in urban areas. Some of the situations encountered when using traditional medicine include a lack of studies, appropriate management mechanisms, education, training, and expertise (Andriati dan Wahjudi, 2016). In addition, because lack of thorough clinical research and proof, particularly based on total medical examinations, implies that few doctors tend to offer jamu drinks as treatment options. Generally, Indonesia is renowned for the variety of its plants and vegetation. Indonesian people learn this and disseminate it in various types and levels, ranging from environmental information

Corresponding author's email: andkrnwan@gmail.com

that has been passed down from generation to generation through experience. The first seminar on jamu was held in 1940, followed by the establishment of the Indonesian Jamu Committee that was chaired by Prof. Dr. Sato, the Head of the People's Health Agency (Tilaar & Widjaja, 2014). Currently, jamu drink is widely used by the community to treat a variety of diseases that are not explicitly stated in the medical field, such as "*masuk angin*", namely fevers that can render the body unfit or 'flu-like symptoms. In general, Indonesians will seek out herbal ingredients containing ginger as a treatment (Winarsa, 2019). Jamu is a traditional herbal drink made from a combination of typical Indonesian spices found in traditional markets, which gives jamu drinks a wide range of recipes. The typical Indonesian spices such as ginger, turmeric, lemongrass, tamarind, cloves, nutmeg, pepper, cardamom, and cinnamon. Jamu has an important role in maintaining body resistance, preventing nausea, relieving flatulence, pain, fever, and diarrhea, and able to increase appetite (Beers, 2001). Jamu drinks are sold in a variety of forms and packaging materials, including modern bottles, tablets, capsules, cans, and sachets, all of which are manufactured on a large scale. Furthermore, there is a sales method with a micro, small, and medium-sized enterprise (MSME) that is packaged in large bottles and then placed in baskets; this type of sale is commonly referred to as "*jamu gendong"*. The herbal medicine seller, "*mbok jamu*" is usually a middle-aged woman who carries a basket of traditional remedies tied around her body with batik cloth and goes around offering jamu drinks from house to house, market, and office. Over the passage of decades, jamu drinks, which are produced by home industries, have evolved into more efficient packaging in the form of branded bottles, which are then made available for immediate consumption. This jamu is more personalized since it makes it easier for consumers to keep and carry products in their daily activities. Furthermore, this type of labeled bottles herbal drink is popularly known as "*jamu kekinian"* or jamu modern (Putro, Utomo, & Syarief, 2020). The current development of jamu has also become an MSME product that can be sold through food and beverage delivery applications.

According to the findings of a study conducted by Roosinda, a large-scale enterprise known as PT Jamu Iboe Jaya has been working to alter people's perceptions of jamu as an ancient traditional drink that has a bitter taste and only needs to be drunk when feeling ill. However, contrary to popular belief, not all jamu recipes have a bitter flavor, and there are many different recipes that might help the body keep its resistance (Roosinda, 2021). In addition, the study from Tamara explained a case from a jamu and coffee shop. Suwe Ora Jamu, a shop located in South Jakarta, has developed product innovations by attempting to make one-of-a-kind and inventive herbal drinks without neglecting the drinks' health benefits. This new product has been developed with the intention of transforming jamu, which is known as an "old traditional drink" and has an astringent flavor, into an herbal drink that has a contemporary vibe to it (Dewi, 2019; Tamara & Setyanto, 2018). In contrast to the conventional approach of selling herbal medicine, which permits direct interaction between *mbok jamu* and prospective consumers, the e-commerce application marketing approach does not immediately make this product understandable to consumers. In addition, the name of jamu drink does not always convey the flavor specifically, i.e., *beras kencur, cabe puyang, kunci suruh, kudu laos, uyub-uyub (gepyokan),* and *sinom* (Murdijati-Gardjito, Harmayani, & Suharjono, 2018). According to the strategies from jamu industries to create new flavor variations, jamu drinks supplied in transparent glass bottles have a variety of color appearances, which may mislead potential consumers into identifying and consuming these varieties of jamu. The younger generation, on the other hand, is particularly looking for jamu drinks with a pleasant flavor. For this reason, the jamu industries need a guide that can be used as a reference to consider each color of the herbal drink in order to make it appealing to the younger generation.

LITERATURE REVIEW

The intricacies of the interrelationship between psychology and color have been a topic of scholarly interest, stimulating a substantial body of research that warrants further in-depth exploration and empirical investigation (Elliot, 2015). The role of color is widespread in our psychological experiences, influencing various aspects of human behavior and mind, including basic vision, object recognition, scene perception, communication, and aesthetics (Maule, J., Skelton, A. E., & Franklin, A., 2023). Previously, Oram conducted an experiment involving the use of food dye to modify the color of beverages; the results revealed a correlation between the perception of color and taste (Oram et al., 1995). In addition, research that was carried out by Hoppu reveals that the influence of color perception on taste is also affected by factors such as age, weight, and educational background (Hoppu, Puputti, Aisala, Laaksonen, & Sandell, 2018). Research conducted by Carvalho explained that color perception from beer also affects the taste and its price expectations (Carvalho, Moors, Wagemans, & Spence, 2017). The most recent study on this particular topic was conducted by Fateminia, and it compared the color perception between drink and taste with four different color groups, i.e., primary color, secondary color, tertiary color, and monochrome color; the researchers found that different colors significantly stimulated different types of taste (Fateminia, Ghotbabadi, & Azad, 2020; Fateminia, Ghotbabadi, & Mohammadi Azad, 2018).

According to the findings of annual surveys conducted by international statistics organizations, Indonesia is a nation that is home to 170 million people who actively use social media applications. This data represents 61.8% of the country's total population (we are social & Hootsuite, 2021). Furthermore, in order to reach potential customers, the owners of micro, small, and medium-sized enterprises (MSME) must examine a variety of factors, including their attitude, experience, and skill (Utami & Mulyaningsih, 2017; Eltari & Mulyaningsih, 2017). The phenomenon of today's society tends to utilize online application media, also known as e-commerce, in order to purchase a product (Lestari, 2020). Previous research revealed that by adopting an e-commerce strategy, social media and virtual products can boost sales for MSME industry stakeholders (Leong, Retnawati, & Irmawati, 2021). Influencer marketing, especially celebrity endorsements, can raise online sales significantly (Hermawan, 2020). Thus, in contrast to the majority of previous studies that involved direct experiments, this study was conducted completely with photographic images. The photographs of beverage items that can be found on a variety of digital platforms play an essential part in conveying the actual product.

RESEARCH METHOD

This study focuses on taste perception from Indonesian traditional herbal drinks (jamu) color for the younger generation by using photo products. Participants in this study are specifically Indonesians aged 16 to 25. According to the statistical agency Alvara, the generation represented by young millennials and Generation Z is the group with the highest level of dependence on internet technology; therefore, they frequently use e-commerce applications to purchase products (Ali et al., 2020). Thus, it can be elaborated in this research that uses photo images. Furthermore, in general, the human tongue can taste sweet, bitter, sour, salty, and savory (Augustine et al., 2018), then the researchers also added 5 choices, i.e., combinations from "sweet & hot" to accommodate the taste of ginger as one of the main ingredients that are often used in jamu recipes, followed by a "sweet & sour" which is a common taste in various types of drinks, a "hot & sour" to accommodate participant's perceptions if they think the jamu drink contains chili or pepper, a "sour & salty" to accommodate the taste of various fruit juice, and the researcher provides a "tasteless" to anticipate if participants assume there is no dominant flavor. However, because this study only focuses on color and taste perception, other aspects of each herbal medicine recipe's efficacy will not be mentioned in detail.

This study aimed to investigate the preferred taste of jamu drinks among the younger generation and how their perception of taste could be influenced by the colors of the drinks. To achieve this, the study utilized a mixed-method approach involving two phases. In the first phase, a questionnaire was used to gather data on the types of jamu drink flavors preferred by the participants. The questionnaire presented a list of tastes, and each participant was asked to indicate whether they would like a jamu drink with each taste. The researcher had prepared the list of tastes beforehand based on commercially available product flavors. The responses from the questionnaire were used to identify the most and least preferred jamu drink flavors among the younger generation. Each participant answered the question: "Would you like a jamu drink with the following taste?" The researcher had prepared a list of tastes, and each participant answered the question with a 'yes' or 'no'.

In the second phase, participants were shown pictures of jamu drinks in transparent glass bottles without labels. The images were arranged and displayed simultaneously based on Merleau-Ponty's theory of perception, which suggests that human perception can be affected by the presence of objects around it (Maurice & Merleau-Ponty, 2012). This means that participants' perception of the jamu drink colors could be influenced by the other colors in the image; this is similar to the user experience when browsing products on an e-commerce application. Participants were then asked to identify the dominant taste of each drink based on their perception of its color. Furthermore, the image was created in the RGB (Red-Green-Blue) color mode due to the use of digital screens throughout this research. This experiment was conducted by showing photos of jamu drinks filled in transparent glass bottles without product labels; each participant was asked to fill out a questionnaire for every bottle. Question: "According to your perception, what is the dominant taste of this jamu drink?". The following color selections are based on researchers' observations of the various commercially available product colors.

Figure 1. Jamu drink product photo image

Based on Figure 1, there are 9 color variations of jamu that were perceived by each participant. After completing the questionnaire, the researcher held a discussion with them to gain more in-depth insights into their preferences. The discussion allowed participants to elaborate on their answers and provide further context for their responses. Through this qualitative aspect of the study, the researcher was able to gain a deeper understanding of the factors that influence the taste preferences of the younger generation for jamu drinks.

FINDINGS AND DISCUSSION

The experiment was conducted by a questionnaire and forum discussion total of 111 participants (F=61, M=50), with an average age of 21.7 years; all participants are students from the school of design, majoring in visual communication. Researchers consider this since it has been verified that none of the participants from this school are colorblind. Furthermore, these students can be helpful for researchers because they discuss their comments towards this questionnaire in context. The results:

Phase 1

The results from the first phase of the experiment showed that sweet taste is the most preferred among the younger generation, followed by sweet & sour, sweet & hot, and sour taste. Interestingly, the tasteless and savory taste still received a considerable amount of likes from some participants. On the other hand, bitter taste, sour & salty, and salty taste were not preferred by most of the participants, and hot & sour was the least liked the taste.

Table 1. Participants' preferences for jamu drink

	Like	**Dislike**
Sweet	93,3%	6,7%
Sour	62,2%	37,8%
Salty	13,3%	86,7%
Bitter	22,2%	77,8%
Savoury	38,6%	61,4%
Sweet & Hot	63,1%	36,9%
Sweet & Sour	77,8%	22,2%
Hot & Sour	8,9%	91,1%
Sour & Salty	15,9%	84,1%
Tasteless	48,9%	51,1%

The researcher and participants had a fruitful discussion about the results. They concluded that the preference for sweet taste is not surprising, given that sweet drinks are widely consumed in Indonesia. However, the relatively high preference for sweet & sour and sweet & hot tastes may indicate the younger generation's interest in exploring new and more complex flavors. The dislike for bitter taste was also discussed, and the participants pointed out that bitterness is often associated with negative experiences, such as medicine or spoiled food. According to Sugimori, people tend to avoid this due to its association with potentially toxic substances. This aversion can be attributed to the bitter taste functioning as a warning signal from the body to avoid ingesting harmful food or drink (Sugimori, E., & Kawasaki, Y., 2022). Finally, the researchers and participants agreed that taste preference is a complex and culturally influenced phenomenon.

Phase 2

The results of bottle no. 1 with turbid water show that the majority of participants perceive the jamu drink to be tasteless, with other taste choices having a similar vote percentage. This could be due to the fact that this bottle contains boiled water from spear grass roots or sugar cane, which might not have a strong taste. During the discussion, some participants shared their thoughts on the perception of taste and color. They mentioned that the appearance of the drink in the photo might have influenced their perception of the taste. For example, if the color of the drink looked bright and vibrant, they might have expected a sweet or fruity taste. On the other hand, if the color looked dull or murky, they might have expected a less appealing taste. Some participants also

pointed out that taste is subjective and can vary from person to person. They mentioned that factors such as culture, upbringing, and personal preferences could influence one's perception of taste. Therefore, it is crucial for the beverage industry to carefully consider the color of its products as it can serve as a key indicator of marketing success (Krishna, A., & Elder, R. S., 2021).

Table 2. Bottle 1 Result

	Participants	**%**
Sweet	11	9,91%
Sour	12	10,81%
Salty	9	8,11%
Bitter	9	8,11%
Savoury	8	7,21%
Sweet & Hot	7	6,31%
Sweet & Sour	8	7,21%
Hot & Sour	0	0,00%
Sour & Salty	0	0,00%
Tasteless	47	42,33%

The result of the second bottle, which is perceived to have a sweet taste by the majority of participants, is intriguing. It is interesting to note that despite the fact that some white-colored herbal recipes can be spicy or hot, nearly all participants believe this jamu to be sweet, which indicates that participants' perception of flavor is largely influenced by their previous experience. Additionally, the fact that the white color of the jamu resembles milk may also have contributed to the perception of sweetness, as milk is generally associated with sweetness.

Table 3. Bottle 2 Result

	Participants	**%**
Sweet	72	64,87%
Sour	0	0,00%
Salty	4	3,61%
Bitter	10	9,01%
Savoury	12	10,81%
Sweet & Hot	3	2,70%
Sweet & Sour	3	2,70%
Hot & Sour	3	2,70%
Sour & Salty	0	0,00%
Tasteless	4	3,60%

During the forum discussion, some participants also mentioned that they had prior experience with similar herbal drinks that were sweet in taste and white in color. This suggests that their previous experience with herbal drinks could have influenced their perception of the taste of the jamu in bottle no 2. Furthermore, some participants also mentioned that they associate the color white with purity and cleanliness, which may have contributed to their perception of the jamu as sweet and pleasant.

Table 4. Bottle 3 Result

	Participants	**%**
Sweet	0	0,00%
Sour	30	27,03%
Salty	2	1,80%
Bitter	41	36,94%
Savoury	5	4,50%
Sweet & Hot	13	11,71%
Sweet & Sour	10	9,01%
Hot & Sour	10	9,01%
Sour & Salty	0	0,00%
Tasteless	0	0,00%

The results of the survey indicate that the majority of participants perceive the jamu drink in bottle no 3 as having a bitter taste (36,94%), followed by a sour taste (27,03%). These results may be due to the brown color of the drink, which is typically associated with bitter flavors in many foods and drink products. It is interesting to note, however, that there were some participants who perceived sweet and hot taste (11,71%), sweet and sour taste (9,01%), and hot and sour taste (9,01%), indicating that there may be some variation in the perception of the taste of the drink. The fact that participants were uncertain about the recipe of the jamu drink is also worth noting. This may indicate that the participants have little knowledge about the ingredients and recipes of traditional herbal drinks. Overall, the results suggest that there is a need to educate the public about the ingredients and recipes of traditional herbal drinks in order to promote their consumption and appreciation; one example is by using social media marketing so that consumers can better understand the product (Li et al., 2021).

Table 5. Bottle 4 Result

	Participants	**%**
Sweet	11	9,91%
Sour	41	36,93%
Salty	4	3,61%
Bitter	7	6,30%
Savoury	2	1,80%
Sweet & Hot	3	2,70%
Sweet & Sour	34	30,63%
Hot & Sour	5	4,51%
Sour & Salty	4	3,61%
Tasteless	0	0,00%

The results from the survey on the fourth bottle with orange color revealed that the majority of participants perceived it to have a sour taste (36.93%) followed by sweet & sour (30.63%) and sweet taste (9.91%). Surprisingly, participants' answers were spread across various flavors except tasteless. These results align with previous research by Fateminia that stated the orange color is associated with a sour and sweet taste. Participants also commented that the photo resembled orange juice, but the color was likely influenced by a combination of Curcuma, cloves, sinom, and a hint of ginger or turmeric. It is interesting to note that sinom can produce a sour taste, which could explain why many participants perceived the drink to have a sour taste. The results from this survey are consistent with those displayed in Table 3, suggesting that younger respondents base their perception of taste on their previous knowledge and experiences. Overall, this finding highlights

the importance of color perception and the role it plays in shaping people's expectations and experiences of taste. Based on previous studies, it is important for jamu producers to consider the level of sourness in their drinks as consumers have limited tolerance towards highly sour tastes, and tend to dislike them (Pomirleanu, 2020).

Table 6. Bottle 5 Result

	Participants	**%**
Sweet	13	11,71%
Sour	5	4,50%
Salty	3	2,70%
Bitter	20	18,02%
Savoury	2	1,80%
Sweet & Hot	45	40,54%
Sweet & Sour	17	15,32%
Hot & Sour	6	5,41%
Sour & Salty	0	0,00%
Tasteless	0	0,00%

The results of the survey for bottle no 5 suggest that the red ginger and sappan wood combination has a significant impact on the perception of taste. The majority of participants perceive the taste to be sweet and hot, which indicates that the combination of these ingredients is likely to result in a taste that is recognizable. However, there is still a small percentage of participants who perceive the taste to be bitter, which suggests that taste perception can vary among individuals. This is an important indicator that red ginger is known as one of the ingredients to make jamu with high efficacy (Zhang et al., 2022), thus making this color choice a good option to gain acceptance from potential consumers.

Table 7. Bottle 6 Result

	Participants	**%**
Sweet	25	22,53%
Sour	45	40,54%
Salty	1	0,90%
Bitter	9	8,11%
Savoury	2	1,80%
Sweet & Hot	3	2,70%
Sweet & Sour	20	18,02%
Hot & Sour	2	1,80%
Sour & Salty	4	3,60%
Tasteless	0	0,00%

The survey results indicated that bottle no. 6, with a yellow color, was perceived to have a sour taste by the majority of participants (40.54%), followed by a sweet taste (22.53%) and a sweet and sour taste (18.02%). These findings are similar to the participants' perception of bottle no. 4. The results demonstrate that participants' previous experiences greatly influence their perceptions. With a color similar to orange juice, younger generations claim it has a sour or sweet taste. Additionally, previous studies summarized by Spence have also indicated that the yellow color is closely associated with the perception of a sour taste (Spence, C., & Levitan, C. A., 2021). However, some jamu drink recipes that contain turmeric to produce this yellow color have a bitter taste. Despite the fact that the majority of participants' perceptions are inaccurate, this finding

requires further attention, especially from the industry. One of the participants revealed that they perceived bottle no. 6 to have a fresh lemon taste, which was quite surprising. The participant explained that the taste was similar to everyday lemonade.

Table 8. Bottle 7 Result

	Participants	%
Sweet	22	19,82%
Sour	4	3,60%
Salty	5	4,50%
Bitter	52	46,85%
Savoury	1	0,90%
Sweet & Hot	3	2,70%
Sweet & Sour	11	9,91%
Hot & Sour	0	0,00%
Sour & Salty	0	0,00%
Tasteless	13	11,72%

Bottle no 7, with its green color, significantly gives the result that it is perceived to have a bitter taste (46,85%), followed by sweet (19,82%), although there are participants who think it has a sweet taste, most of them think it has a bitter taste, this type of jamu is usually the result from mixed various vegetables such as sambiloto and papaya leaf. However, there are few references to types of drinks that are able to produce a green color other than melon, green grapes, or vegetables, so the perception of the younger generation will be in the same scope.

Table 9. Bottle 8 Result

	Participants	**%**
Sweet	58	52,25%
Sour	4	3,60%
Salty	0	0,00%
Bitter	18	16,22%
Savoury	1	0,90%
Sweet & Hot	1	0,90%
Sweet & Sour	5	4,50%
Hot & Sour	5	4,50%
Sour & Salty	0	0,00%
Tasteless	19	17,13%

The forum participants discussed the taste and color of bottle no. 8, which was blue. Although the blue color is often considered for use in food or beverage applications (Spence, C, 2018), different results were found from research on jamu drinks. The majority of the participants (52.25%) perceived the taste to be sweet, while a smaller percentage found it to be tasteless (17.13%) or bitter (16.22%). The participants speculated on the ingredients that might contribute to the sweetness, such as honey, sugar, or other natural sweeteners. Some participants noted that the taste might vary depending on the recipe and preparation method. The participants also discussed the rarity of blue-colored jamu, with only a few known recipes that produce this color. One participant mentioned that lemongrass telang is a type of jamu that is known to have a slightly sweet taste and a blue color. Another participant noted that blue is a common color in soft drinks, which might contribute to people's perceptions of sweetness. In addition, several previous studies have indicated that blue-colored drinks are associated with a minty flavor (Spence et al., 2010).

Overall, the forum participants found the taste and color of bottle no. 8 to be interesting and unique. Some participants expressed a desire to learn more about the ingredients and potential health benefits of this type of jamu. Others suggested experimenting with different recipes and flavor combinations to create new and exciting variations of blue-colored jamu.

Table 10. Bottle 9 Result

	Participants	**%**
Sweet	56	50,45%
Sour	9	8,11%
Salty	4	3,60%
Bitter	1	0,90%
Savoury	0	0,00%
Sweet & Hot	10	9,01%
Sweet & Sour	15	13,51%
Hot & Sour	13	11,72%
Sour & Salty	0	0,00%
Tasteless	3	2,70%

The participants in the forum turned their attention to bottle no. 9, which was distinguished by its red color. The majority of participants (50.45%) perceived the taste to be sweet, while a smaller percentage found it to be sweet and sour (13.51%) or hot and sour (11.72%). The discussion then turned to the potential sources of the red color in jamu drinks, with participants noting that rosella flowers and sappan wood are commonly used to produce this color. Several participants noted the interesting finding that the red color seemed to reduce the perception of being tasteless (2.70%) or bitter (0.90%). Some participants hypothesized that this might be due to the strong association of red with sweetness, which could prime people's taste buds to perceive a sweeter taste in the drink. The participants discussed their own experiences with drinking red-colored jamu and shared their favorite recipes, with some highlighting the health benefits of different ingredients. The group agreed that the sweet taste and vibrant red color made this drink more appealing than the blue-colored drink discussed earlier. Therefore, the red color can serve as a significant indicator in enhancing the success of beverage product marketing (Pinto, T., & Vilela, A., 2021).

CONCLUSIONS

The findings of this study shed light on the intricate relationship between color and taste perception, highlighting the role of previous experience in shaping our sensory experiences. It is fascinating to note that the colors commonly associated with milk or fruit juice can influence our perception of the taste of jamu, which indicates the power of visual cues in determining our flavor preferences. Although there were some cases where the perception was incorrect, this study emphasizes the importance of color as a key factor in the sensory experience of consumers, especially in the food and beverage industry. Despite their preference for sugary drinks, the younger generation's liking for sweet-tasting jamu drinks is evident in the study findings. One way to offer a healthier choice is by incorporating natural sweeteners in the production process.

It is noteworthy that this study has also expanded the scope of jamu, which is not just perceived as a remedy for ailments, but also as a drink that promotes overall well-being. Based on the results, it can be concluded that color perception is a crucial aspect of the sensory experience of herbal drinks, and innovative exploration of jamu recipes that adapt to the preferences of younger generations is highly recommended. The study found that white, red, blue, and yellow colors were preferred, while brown and green colors were associated with a bitter taste. This

suggests the need for the exploration of herbal drinks with bitter tastes to be transformed into pleasant-tasting beverages. Finally, the study identified turbid water as a potential taste preference. Furthermore, these findings strengthen various previous studies that the color will be able to make humans perceive its taste; although sometimes the perception is wrong, it can be used as an important reference for industries. In addition, the results of this study also show that the perception of color can be done without the need to see the product directly.

LIMITATION & FURTHER RESEARCH

Based on the findings of this study, there are several limitations that need to be addressed in future research. First, this study only focuses on the perception of taste based on color without considering other factors that may influence taste perception, such as texture, aroma, and temperature. Thus, it is recommended for future research to include these factors in the study to obtain a more comprehensive understanding of the taste perception of traditional herbal drinks. Another limitation of this study is that it only focuses on the perception of taste by the younger generation. It is possible that older generations may have different perceptions of taste for traditional herbal drinks. Furthermore, future research could consider including participants from different age groups to obtain a broader perspective on the taste perception of traditional herbal drinks. In addition, this study only used photo products of jamu drinks, which may not accurately reflect the taste perception of actual jamu drinks. Therefore, future research could conduct sensory evaluations of actual jamu drinks to obtain more accurate and reliable data. Last but not least, exploring traditional herbal drinks from other countries could provide valuable insights into the perception of taste based on color in different cultures and contexts.

REFERENCES

Andriati, dan Wahjudi, R. M. T. (2016): Tingkat penerimaan penggunaan jamu sebagai alternatif penggunaan obat modern pada masyarakat ekonomi rendah-menengah dan atas, *Masyarakat, Kebudayaan dan Politik*, 133–145. https://doi.org/10.20473/mkp.V29I32016.133-145

Ali, H., Lilik, P., Nugroho, H., Halim, T., Firdaus, K., & Huda, N. (2020). Indonesia Gen Z And Millenial Report 2020: The Battle Of Our Generation. PT Alvara Strategi Indonesia. Retrieved from http://alvara-strategic.com/indonesia-gen-z-and-millenial-report-2020.

Anandajoti. (2020). Borobudur - Karmavibhaga. Ehipassiko Foundation - Dharma Character Building.

Augustine, G. J., Fitzpatrick, D., Hall, W. C., Hayden, B., LaMantia, A.-S., Mooney, R. D., Platt, M. L., et al. (2018). Neuroscience (6th ed.). Sunderland, MA 01375 USA.

Beers, S.-J. (2001). Jamu - The Ancient Indonesian Art of Herbal Healing. Tuttle Publishing.

Carvalho, F. R., Moors, P., Wagemans, J., & Spence, C. (2017). The influence of color on the consumer's experience of beer. Frontiers in Psychology, 8(DEC), 1–9. https://doi.org/10.3389/fpsyg.2017.02205

Dewi, N. (2019). Cerita Jamu. Jakarta: Aikon.

Elliot AJ (2015) Color and psychological functioning: a review of theoretical and empirical work. Front. Psychol. 6:368. doi: 10.3389/fpsyg.2015.00368

Eltari, A. T., & Mulyaningsih, H. D. (2017). The Impact of Entrepreneurial Behavior on Sales Volume. International Journal of Management, Entrepreneurship, Social Science and Humanities, 1(1), 1–6. https://doi.org/10.31098/ijmesh.v1i1.3

Lestari, T. K. (2020). Statistik E-Commerce 2020.

Fateminia, M., Ghotbabadi, T. D., & Azad, K. M. (2020). Perceptions of the taste of colors in children and adults. Color Research and Application, 45(4), 743–753. DOI:10.1002/col.22503

Fateminia, M., Ghotbabadi, T. D., & Mohammadi Azad, K. (2018). Taste Laws in Color Wheel and its Impact on Food Packaging. Journal of Food Processing & Technology, 09(06). DOI: 10.4172/2157-7110.1000739

Hermawan, D. (2020). Influencer Marketing in Digital Era: Does It Really Works? International Journal of Management, Entrepreneurship, Social Science and Humanities, 3(2), 50–67. https://doi.org/10.31098/ijmesh.v3i2.260

Hoppu, U., Puputti, S., Aisala, H., Laaksonen, O., & Sandell, M. (2018). Individual differences in the perception of color solutions. Foods, 7(9), 1–8. https://doi.org/10.3390/foods7090154

Krishna, A., & Elder, R. S. (2021). A review of the cognitive and sensory cues impacting taste perceptions and consumption. *Consumer Psychology Review*, *4*(1), 121-134. DOI: 10.1002/arcp.1069

Leong, H. ., Retnawati, B. B. ., & Irmawati, B. . (2021). How Far the Digital Marketing Innovation done by Natural Raw Material MSMEs during the Pandemic? Case of Magelang Region, Central Java Region, Indonesia. Journal of Social Entrepreneurship Theory and Practice, 1(1), 68–83. https://doi.org/10.31098/jsetp.v1i1.643

Li, F., Larimo, J., & Leonidou, L. C. (2021). Social media marketing strategy: definition, conceptualization, taxonomy, validation, and future agenda. Journal of the Academy of Marketing Science, 49, 51-70. https://doi.org/10.1007/s11747-020-00733-3

Maurice, & Merleau-Ponty. (2012). Phenomenology of Perception. New York: Routledge.

Maule, J., Skelton, A. E., & Franklin, A. (2023). The Development of Color Perception and Cognition. Annual Review of Psychology, 74, 87-111. https://doi.org/10.1146/annurev-psych-032720-040512

Murdijati-Gardjito, Harmayani, E., & Suharjono, K. I. (2018). *Jamu - Pusaka Penjaga Kesehatan Bangsa, Asli Indonesia*. Yogyakarta: Gadjah Mada University Press.

Tilaar, M., & Widjaja, B. T. (2014). The Power of Jamu. Jakarta: PT Gramedia Pustaka Utama.

Utami, E. N., & Mulyaningsih, H. D. (2017). The Impact of Competency Entrepreneurship on Micro, Small, Medium Enterprises Performance. *International Journal of Management, Entrepreneurship, Social Science and Humanities*, *1*(1), 24–30. https://doi.org/10.31098/ijmesh.v1i1.7

Oram, N., Laing, D. G., Hutchinson, I., Owen, J., Rose, G., Freeman, M., & Newell, G. (1995). The influence of flavor and color on drink identification by children and adults. *Developmental Psychobiology*, *28*(4), 239–246. DOI: 10.1002/dev.420280405

Pomirleanu, N., Gustafson, B. M., & Bi, S. (2020). Ooh, that's sour: An investigation of the role of sour taste and color saturation in consumer temptation avoidance. Psychology & Marketing, 37(8), 1068-1081. DOI:10.1002/mar.21363

Pinto, T., & Vilela, A. (2021). Healthy drinks with lovely colors: Phenolic compounds as constituents of functional beverages. Beverages, 7(1), 12. DOI: 10.3390/beverages7010012

Putro, W. R., Utomo, R. D. W., & Syarief, A. (2020). Analisis Elemen Visual Pada Desain Kemasan Produk Jamu Houseblend Suwe Ora Jamu. *Jurnal Seni dan Reka Rancang: Jurnal Ilmiah Magister Desain*, (2), 253. https://doi.org/10.25105/jsrr.v2i2.8238

Roosinda, F. W. (2021). Corporate Communication through the Campaign of Consuming Jamu. The Messenger, 13(1), 33. http://dx.doi.org/10.26623/themessenger.v13i1.2245

Sugimori, E., & Kawasaki, Y. (2022). Cross-modal correspondence between visual information and taste perception of bitter foods and drinks. *Food Quality and Preference*, *98*, 104539. https://doi.org/10.1016/j.foodqual.2022.104539

Spence, C., & Levitan, C. A. (2021). Explaining crossmodal correspondences between colours and tastes. *i-Perception*, *12*(3), https://doi.org/10.1177/20416695211018223

Spence, C. (2018). What is so unappealing about blue food and drink? International Journal of

Gastronomy and Food Science, 14, 1-8. https://doi.org/10.1016/j.ijgfs.2018.08.001

Spence, C., Levitan, C. A., Shankar, M. U., & Zampini, M. (2010). Does food color influence taste and flavor perception in humans? Chemosensory perception, 3, 68-84. DOI: 10.1007/s12078-010-9067-z

Tamara, J., & Setyanto, Y. (2018). Strategi Public Relations dalam Membangun Brand Image Jamu (Studi pada Suwe Ora Jamu Kedai Jamu & Kopi). Prologia, (2), 377. https://doi.org/10.24912/pr.v2i2.3715

We are social, & Hootsuite. (2021). Data digital Indonesia 2021. Global Digital Insights.

Winarsa, H. (2019). Strategi Pengembangan Jamu Kemasan Di Indonesia. J. Madani, (1), 131–144. https://doi.org/10.33753/madani.v2i1.40.

Zhang, S., Kou, X., Zhao, H., Mak, K. K., Balijepalli, M. K., & Pichika, M. R. (2022). Zingiber officinale var. rubrum: Red ginger's medicinal uses. Molecules, 27(3), 775. DOI: 10.3390/molecules27030775