Perception analysis and factor affecting the consumption of local food from corn in Kendari City

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Abstract. Corn-based local food must continue to be encouraged to be a buffer for national food security, so that dependence on rice can continue to be reduced. The assessment was conducted to determine the perceptions and factors that influence the consumption of local food from corn. The research was conducted in Kendari City using a survey method of 150 respondents who were selected through random sampling based on ethnic diversity in Kendari, namely Tolakinese (local ethnicity), Munanese, Butonese, Bugisnese / Makassarnese, Javanese / Sumatranese and others and Chinese. The results of the study showed that public perception was classified as moderate (64%). Factors affecting the consumption of local food from corn are age, number of household members, ethnicity and cosmopolit level. In the future, the consumption of local food from corn still needs to be improved through promotion and advocacy as well as reforming various aspects, especially aspects of nutrition and health.

1. Introduction

Hunger and poverty are the most important issues faced by the government along with the increasing world population that estimated at 9.8 billion by 2050. In particular in Indonesia, the trend of population growth in 2010-2050 is 0.994. Poverty is closely related to economic access to food which is an indicator to achieve food security. Food security has three main elements namely (a) food availability and stability; (b) food accessibility, and (c) food utilization [1, 2, 3].

Fulfillment of food as basics need continues to be an important platform in every government regime, although to fulfill it faced with various obstacles including (1) the shrinking of the peasant population, so efforts to increase food production must be carried out through expansion of new agricultural areas but still taking into account environmental balance, (2) the major challenges of climate change, which are expected to cause changes in the production process, especially grain food production (3) the increase in fuel prices adds to the challenges of global food supply. The increase in fuel prices means that agriculture is increasingly important to produce bioenergy [4].

The food diversification policy that began in the 1960s continued until now by Jokowi-JK government. The simple meaning of diversification of food consumption is increasing of kind of food that consume according to the principle of balanced nutrition so that the quality of food becomes better. In general, the main purpose this program’s on going is to reduce community dependence for rice as a main and strategic food, with a target of reducing rice consumption by 1.5% per year, while increasing the diversity of food is expected to increase community nutrition quality to be more diverse and balanced that can be seen in food pattern future score. One strategy that can be used is to encourage local food in the consumption pattern [4, 5, 6, 7, 8, 9, 10].
Local food or also commonly known as traditional food or ethnic food is a food that has various attributes including reminding people of their childhood and regionalism, having a value of authenticity, related to regionalism and culture and customs, the production and serving process are usually handed down from generation to generation and generally received positively [11,12,13,14,15,16,17,18].

Local food plays an important role in efforts to diversify food, not only as an alternative source of carbohydrates, essential vitamins and minerals the body needs to stay healthy but also locales have a competitive advantage in national food trade. One of the local food came from corn. This commodity can be used as a rice substitute to promote food diversification, because corn has several advantages, including having a widespread and fairly good carbohydrate production and also familiar in the community. This choice is very strategic, not only because corn is a commodity that has a widespread and good carbohydrate production and is well-known among the community [19,20].

The comparison of calories, nutrient content between corn with some commodities, indicated that corn contains various dietary fiber needed by the body (dietary fiber). Furthermore, it can be explained that the glycemic index (IG) of maize is relatively low compared to rice, so corn is one kind of food that is recommended for diabetics patient. IG of rice is 50-120 while corn only 50 - 90 which depends on the variety. Food fiber (especially soluble fiber) can reduce cholesterol levels in the blood plasma by increasing the excretion of bile acids into the faeces. Besides, food fibers will bind cholesterol to be secreted to the faeces, thereby reducing cholesterol absorption in the intestine [21].

Table 1. Comparison nutrient content among important commodities.

| No. | Commodities | Calories (cal) | Protein (g) | Fat (g) | Carbohydrate (mg) | Ca (mg) | Fe (mg) | Teonine (mg) |
|-----|-------------|---------------|-------------|--------|-------------------|---------|---------|-------------|
| 1.  | Rice        | 366           | 6.4         | 0.8    | 80.4              | 24      | 1.9     | 0.01        |
| 2.  | Corn        | 349           | 9.1         | 4.2    | 71.7              | 14      | 2.8     | 0.29        |
| 3.  | Cassava     | 98            | 0.7         | 0.1    | 23.7              | 19      | 0.6     | 0.04        |
| 4.  | Potato      | 71            | 1.7         | 0.2    | 16.3              | 8       | 0.7     | 0.09        |
| 5.  | Sago        | 357           | 1.4         | 0.2    | 85.9              | 15      | 1.4     | 0.01        |

Source: [22]

Even corn contains has energy, carbohydrate and vitamin content that can compete with rice as the main food, it seems that the level of corn consumption is relatively limited. The consumption of local food from corn still limited, and only become additional food in the community. That is because the public perception of local food is seen as still inferior. These perceptions are built from a false pattern of thinking about corn commodities. The pattern of consumption of local food is still not widely studied. Utilization of maize as local food in Southeast Sulawesi, especially in some regencies in the island area such us Buton and Muna Island and also some smallest Island in Southeast Sulawesi Province. This local food is known as ethnic food. Even though Muna and Buton ethnics stay for a long time in Kendari city, they still used this food as their main [23, 24]. The study was conducted to determine the level of perception and factors that affect the consumption of local food from corn in Kendari City.

2. Methodology

The study was conducted in May - November 2016 in Kendari City. The study was conducted using a structured survey method for 150 respondents who were selected with purposive random sampling, based on ethnic diversity, so that all ethnic groups in the Kendari City were expected to be represented in the respondents. The ethnic proportion determined is Tolakinese 30%, Munanese / Butonese 30%, Bugisnese / Makassarnese 20% and others 20%.

The study was done some analysis such us perception analysis follow by [25], with some statement :

1. Not the villages food (score : agree= 3, doubtfull = 2, disagree = 1)
2. Easy to obtain(score : agree= 3, doubtfull = 2, disagree = 1)
3. Nutritional food (score: agree= 3, doubtfull = 2, disagree = 1)
4. Healthy food (score: agree= 3, doubtfull = 2, disagree = 1)
5. Higienis food (score: agree= 3, doubtfull = 2, disagree = 1)
6. Consume by all professions (score: agree= 3, doubtfull = 2, disagree = 1)
7. Consume by all ages (score: agree= 3, doubtfull = 2, disagree = 1)
8. Affordable price (score: agree= 3, doubtfull = 2, disagree = 1)
9. Easy to serve (score: agree= 3, doubtfull = 2, disagree = 1)
10. Long-lasting (score: agree= 3, doubtfull = 2, disagree = 1)
11. Fell bad if don’t consume in a week (score: agree= 3, doubtfull = 2, disagree = 1)

Regression analysis was used to determine the factors that influence the level local food consumption from corn with some variable such as age (year), education level (year), number of household members (person), long time stay in Kendari city (year), perception for local food from corn, cosmopolite level (scoring), gender (Dummy variable, 1 for man and 0 for woman), ethnicities (Dummy variable, 1 for Muna ethnic and 0 for another) and income (rupiahs). This regression model refers to [26,27] with the equation as follows:

\[ Y_1 = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + b_nX_n + b_0D_1 + b_1D_2 + e \]

3. Result and Discussion

3.1. Respondents characteristic
The age of the respondents was selected in this study was spread proportionally. The majority of respondents age range of 36-45 years and the lowest was in the age range> 60 years. In [28] state that age is one of the social factors that can influence the physical abilities of farmers in working and thinking. Furthermore, in terms of education, majority of responden graduate in junior school - high school, even though some responden also graduate in university. The level of education influence person in thinking and reasoning in terms of identifying, formulating and resolving problems faced and making decisions of kinds consumption both for himself and his household.

Besides that, majority respondents have household members was small, that means that only have 1-2 children. Most of the respondents' main jobs are civil servants and private employees who reach around 54%. The rest are housewives (17.7%) traders (14.7%) as well as labourers, farmers and retirees, whose numbers are around 14.3%. Furthermore, income is one of the determining factors in consuming decisions. Respondents' income levels vary from <2 million to > 4 million. This means that local food from corn consumed by all income levels.

Ethnicity is very closely related to patterns and types of consumption, especially local food. Each ethnic group has habits in their food patterns. Ethnic respondents from the local ethnicities of Southeast Sulawesi (Tolakinese, Butones and Munanese) reached 66.1% and ethnicities outside of Southeast Sulawesi, around 33.9%, consisting of ethnic Buginese / Makassarnese, Javanese/Sumateranese and ethnic Chinese. The length of stay in Kendari city of the respondents varied from 5 - 20 years. This gives an implication that they understood and even consumed local food, including local food from corn.

The cosmopolite level reflects a person's level of openness to the outside environment. The level of cosmopolite was measured from 8 questions related to aspects of openness to information, namely: (1) Subscription to newspapers; (2) Watch television; (3) Listen to radio broadcasts; (4) Use of the internet, (5) Use of BBM / WA, (6) Use of HP, (7) Participate in formal training conducted by the government, and (8) Participate in activities in their environment (community service, recitation, etc). The results of survey indicate that 63.89% of respondents have a high cosmopolite level, 32.32% have a moderate cosmopolite level, and only around 3.78% with a cosmopolite level that is relatively low.
3.2. Perception of local food from corn
Respondents’ perceptions of local food from corn including a moderate category. This reflects that local food from corn has been widely consumed by the public, but its perception still needs to be improved. Some of the things that can be done are through more massive promotion and socialization. The results of the perception analysis are presented in Table 2, which gives information that there are only 5 perception parameters that have high perceptions, namely not the village food, hygiene food, affordable price, easy to serving and long-lasting, the rest parameters are classified as moderate perceptions. Furthermore, several respondents still doubtfull for all perception parameters, which means some respondents assume that local food from corn important to increase the nutrition, hygiene and healthy level, performance is served and also its availability. So the government expected to conduct a contest of local food [24]. Besides that promotion through mass media, youtube, etc that local food as modern food also important to conduct.

### Table 2. Respondent’s perception of local food from corn in Kendari City, 2016

| No  | Parameters                  | Agree | Doubtfull | Disagree | Total |
|-----|-----------------------------|-------|-----------|----------|-------|
| 1   | Not the village food        | 67    | 31        | 3        | 100   |
| 2   | Easy to get                 | 61    | 31        | 8        | 100   |
| 3   | Nutritional food            | 64    | 36        | -        | 100   |
| 4   | Healthy food                | 64    | 36        | -        | 100   |
| 5   | Hygienic food               | 67    | 33        | -        | 100   |
| 6   | Consume by all professions  | 61    | 36        | 3        | 100   |
| 7   | Consume by all ages         | 64    | 31        | 6        | 100   |
| 8   | Affordable price            | 75    | 25        | -        | 100   |
| 9   | Easy to serving             | 72    | 28        | -        | 100   |
| 10  | Long-lasting                | 67    | 33        | -        | 100   |
| 11  | Fell bad if don’t consume in a week | 42    | 36        | 22       | 100   |
|     | Rate                        | 64    | 32        | 4        | 64    |

3.3. Consumption Pattern
The consumption pattern shows the habits of a person or household in consuming food which is generally 3 times a day as a characteristic of the Indonesian food consumption pattern. In this habit, a person or household will consume rice and non-rice food, that identically known as local food. The result of the survey shows that around 24% of respondents have consumed local food from corn in their daily food patterns. They consume local food from corn once until fifth times a week. However, some respondents consumed local food from corn, but the pattern was uncertain. They consume local food only in meetings or parties or other events, that local food was served. The consumption pattern of local food from corn in Kendari City shows in Table 3.

### Table 3. Consumption pattern of local food from corn in Kendari City, 2016

| No   | Consumption Pattern   | Amount (Person) | Percentage (%) |
|------|-----------------------|-----------------|----------------|
| 1    | 1 – 2 times a week    | 13              | 8.7            |
| 2    | 3 – 5 times a week    | 3               | 2.0            |
| 3    | > 5 times a week      | 2               | 1.3            |
| 4    | Uncertain             | 132             | 88.0           |
| Total|                       | 150             | 100            |

Furthermore, it can also be seen that there are still more than half of the respondents who have not to consume local food from corn as part of their daily food pattern. So, in the future socialization and promotion of local food still need to be improved.
3.4. Influencing factor of local food consumption from corn

The results of the regression analysis show that all variables used in the model have a significant effect. This fact can be seen from the F value of 6.127 which is evident at a 95% confidence level. Furthermore, it can be explained that around 82% of the factors affecting the consumption of local food from corn can be explained by the variables included in the model. However, partially the influence of these variables vary significantly. Variables that significantly influence are age, number of household members, ethnicity, and cosmopolites level, but the level of education, gender, long time stay in Kendari City, perception and income level are not significant, as presented in Table 4.

### Table 4. Influencing factors of local food consumption from corn in Kendari City

| No. | Variables (X)                  | Regression coefficient (b_i) | t-value | Significant level |
|-----|--------------------------------|-----------------------------|---------|------------------|
| 1   | Constant                       | 9.497                       | 2.434   | 0.022*           |
| 2   | Age                            | -0.182                      | -2.264  | 0.032*           |
| 3   | Educational                    | -0.209                      | -1.311  | 0.201ns          |
| 4   | Number of household members    | 0.902                       | 2.116   | 0.044*           |
| 5   | Ethnic                         | 3.117                       | 2.361   | 0.026*           |
| 6   | Gender                         | -0.380                      | -0.346  | 0.732ns          |
| 7   | Long time stay in Kendari City | -0.014                      | -0.254  | 0.802ns          |
| 8   | Perception                     | -2.879                      | 3.331   | 0.003*           |
| 9   | Income                         | -5.650                      | -1.595  | 0.123ns          |

* = significant effect in the level of probability 95%

nt = no significant effect in the level of probability 95%

The regression analysis shows that age has a negative relationship with the level of consumption of local food from corn. This is probably due to the increasing number of people in certain limits, people start to consume more soft foods, unlike corn with a harder texture. Furthermore, the variable number of household members have a positive effect on the level of consumption of local food from corn. This fact implies that the greater the number of household members so consumption local food from corn will increase because more people in the household consume local food. It is also supported by survey data that all household members consume the local food from corn both children and parents. Ethnic variables have a positive relationship and have a significant effect on the level of consumption of local food from corn. In this analysis, the ethnic variables are expressed in the Dummy variable where Muna Ethnic = 1 and not Muna Ethnic = 0. This means that Muna Ethnics more consume local food from corn between other ethnicities. This is very reasonable because basically, local food from corn is a type of a native food in Muna ethnic that one of majority ethnic in Kendari City. They live in Kendari for a long time but they still consume their local food namely Kambose [23]. The cosmopolite level variable has a positive relationship with the level of consumption of local food from corn. It can be explained that the social environment has an impact on someone to open and change their perspective include their decisions regarding consumption.

4. Conclusion

Community perceptions of local food are categorized as medium (64%), so that in the future it still needs to be improved especially related to aspects of nutrition, ease of obtaining, health and hygienic aspects and also the popularity of local food for all professional groups. Factors that influence the level of consumption of local food from corn are age, number of household members, ethnicity and cosmopolites. Local food-based corn has the potential to be developed into one of the staple foods other
than rice. Therefore, efforts to increase the consumption of local food from corn still need to be carried out through promotion and advocacy.

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