CHAPTER II
LITERATURE REVIEW

2.1 Food Diversification

According to Riyadi (as cited in Fasak, 2011), food diversification is a process of choosing food which does not depend on just one kind of food, but it has many kinds of alternative food. While Budiarto (2013) states that food diversification can be defined as kinds of food that are consumed, so that the more kinds of food that human is consumed, the more various the food will be. Food diversification is intended to minimalize the consumption of rice whereas nowadays the farm land for rice plant in Indonesia is narrower because of the population explosion. As the result the population explosion, the consumption of rice will increase, too. Rice can be subtituted with another food such as corn, sago, cassava, etc. Similarly with Budiarto (2013), Gembala (2013) states that food diversification is an effort to maintain food tenacity so that Indonesian people do not consume rice monotonously or make rice into main commodity. Moreover, he mentions kinds of local food as the subtitution of rice such as *getuk, tiwul, ampok, gatot,* and corn.

In short, food diversification is an activity or process of diversify food, so that people do not consume the same food in a long time. Food diversification is to maintain the food tenacity, especially in Indonesia which make rice become main commodity. People can subtitute rice with other source of carbohydrate such as corn, sago, cassava, or other local food like *getuk, tiwul, ampok,* and *gatot*.

2.2 Information About Purple Sweet Potato

2.2.1 The Nutrition Fact of Purple Sweet Potato

Purple sweet potato contains many nutrition. According to Suprapto (2003, p.1), purple sweet potato contains the most complete antioxidant compounds. Every 100 gram of purple sweet potato contains 7,700 mg of vitamin A and 9,900 mg of beta caroten. Betakaroten which is a provitamin A in purple sweet potato is one of nutrient that has high antioxidant that can complete the

daily necesity of vitamin A about 280 percent in every 100 gram of purple sweet potato (Kaloriku, 2014). It is accordance with Sulaeman (as cited in Surpree, 2013) which said that if person eat one steamed purple sweet potato in a day, it is already complete the necesity of vitamin A of that person in one day. Besides, the purple sweet potato also has low glicemic index so it is suitable for diabetic person or person who is in diet because it can keep the feeling of hungry longer.

Moreover, purple sweet potato contains antioxidant that has really good function for human body. According to Lim, a researcher from Kansas University, United States (as cited in Surpree, 2013), the color pigmen in purple sweet potato contains antosianin substance that can decrease the risk of cancer, and even cure some diseases. Antosianin substance is able to retard the growth of cancer cells. In addition, Ajeng (2014) says that the antosianin substance in purple sweet potato is an antioxidant substance that is able to absorb air-pollution.

The other nutritions that are contained in purple sweet potato are Zinc (Zn), Calcium (C), Magnesium (Mg), Lisin, Vitamin C, Vitamin B1, mineral, protein, and fiber. It also contains lutein and zeaxanthin, the couple of carotenoid antioxidant that has an important role to prevent the damage cells. In addition, the carotenoid antioxidant in purple sweet potato is very effective as anti-aging because this substance will fight free radicals in human body to improve the immunity (Ajeng, 2014).

Based on the experts' opinion above, it can be concluded that purple sweet potato is a healthy food that can be eaten by everyone. It contains so many nutritions that has really good function for human body. The nutrient substances that purple sweet potato has the most are betakaroten and some antioxidant substances such as antosianin, lutein, and zeaxanthin which are really good substances to prevent and fight cancer cells in human body.

2.2.2 The Benefits of Purple Sweet Potato

As it has already been described, purple sweet potato contains of so many nutrient substances. The nutrient substances in purple sweet potato has really good

benefits for human body. Surpree (2013) mentions the four benefits of purple sweet potato. They are:

1. The antosianin in purple sweet potato able to prevent blood clots so that the blood vessels become swit.
2. Betacaroten, vitamin C, and vitamin E have function as antioxidant that can prevent the growth of cancer cells and some cardiovascular diseases.
3. Fiber in purple sweet potato able to swit the digestion so that the digestion problem such as constipation can be solved.
4. Good source of carbohydrate. The carbohydrate content in purple sweet potato can be an alternative to subtitute rice.

Ajeng (2014) said that purple sweet potato prevents some diseases in human body, started from the light diseases until heavy diseases. This sweet purple sweet potato is able to swit blood vessels because the antosianin in this yam can absorb the air pollution, prevent blood clots, anti-cancer, anti-bacteria, and also able to protect liver from damage, prevent heart attack, even stroke. It is also good for skin so that the performance is always bright and beauty. The vitamin C in purple sweet potato is able to produce collagen in body so that it can work effectively to keep the skin tight and prevent the wrinkle. In conclusion, purple sweet potato has many benefits, such as to retard the growth of cancer cells, to swit blood vessels, to protect liver from damage, to prevent heart attack and stroke, to swit the digestion, to keep beauty of the skin, and as an anti cancer and anti bacteria.

2.3 Information about Noodle

Noodle is one kind of popular food in Asia especially in East Asia and South East Asia. The beginning of noodle making was in China 2000 years ago on Dinasty Han era. From China, noodle developed and spreaded to Japan, Korea, Taiwan, and South East country even until Europe. The activity of rolling wheat was already developed in Middle East, such as in Egypt and Persia. Noodle developed there and was produced manually. On 700M, the small noodle machine

was made with mechanic tools. The evolution of noodle developed massively after T. Masaki in 1854 succeed on making noodle mechanic machine that can produce noodle in a big scale. Since then, noodle undergone many developments, such as in China that started to produce instant noodle which known as Chicken Ramen and Saparo Ramen in Japan (Sutomo, 2006).

2.3.1 Kinds of Noodle

Ikawati (2015) mentions that there are eight kinds of noodle whether it uses wheat flour or another flour in its making process. They are:

1. **Ramen**

   Actually ramen is not from Japan, but it is from China. In the original version, ramen needed water from Lake kan, China. Ramen noodle is made from flour, salt, and water with chewy texture and has pale yellow color. Ramen is usually sold in instant package.

Picture 1. Ramen

2. **Soba**

   It is made from buckwheat. Buckwheat is really good for diabetic person. This signature noodle from Japan is usually served with cold soup and sauce.

Picture 2. Soba

3. **Udon**

Udon is from Japan. It has typical thickness around 4-6mm. Udon is made from wheat flour. It can be served in hot or cold food.

Picture 3. Udon

4. **Egg Noodle**

It is commonly used for Indonesian cuisine. It is made from flour and egg. It is usually sold in dried or wet noodle. In China, it is known as I fu mie.

Picture 4. Egg Noodle

5. **Hokkien**

Hokkien or Hong Kong noodle have a similar shape with egg noodle but it is more rounded and smooth. It is usually sold in wet noodle in airtight packaging. Hokkien noodle is suitable for China and Thailand Cuisine.

Picture 5. Hokkien Noodle

6. **Rice Vermicelli**

It is very popular in Indonesia. It is known as *"bihun"* in Indonesia. It is made from rice flour, has a clean white color, and smooth texture. It is

easily cooked so that it does not need to be boiled, just dip it in hot water. Rice vermicelli is usually sold in dried package and suitable for soup. It is also popular in Vietnam, Thailand, and China.

Picture 6. Rice Vermicelli

7. Cellophane Noodle

Cellophane noodle or *"su'un"* is made from potato flour and green bean flour. The texture is soft and suitable for soup ingredients, or filling for pastry. Cellophane noodles is sold in dried noodle.

Picture 7. Cellophane Noodle

8. Rice Stick Noodle / *Kwetiau*

It is in long thin shape and is made from rice flour. It can be found in the market in wet or dried package. It is usually used for China and Thailand cuisine.

Picture 8. Rice Stick Noodle

While Widayati (2012) mentions that there are 4 kinds of noodle such as:

1. **Raw Noodle or Fresh Noodle**

   Raw noodle or fresh noodle is noodle that has not have additional process after cutting process with the water content reach 35%. Fresh noodle is usually made from rough flour in order to make the process easier. This kind of food is usually used for the ingredients in chicken noodle making.

Picture 9. Raw Noodle

2. **Wet Noodle**

   Wet noodle is noodle that has a boiling process after cutting process and before it is sold. The water content of wet noodle can reach 52% so that the storability is quite quick (40 hours in room temperature). In Indonesia, wet noodle is more known as yellow noodle.

Picture 10. Wet Noodle

3. **Dried Noodle**

   Dried noodle is raw noodle that is already dried with the water content reach 8-10%. The drying process is usually done with the drying process under the sun light or with oven. It makes the storability is quite long and the process is easy. Dried noodle is also

added with fresh egg, so that it is also known as egg noodle in Indonesia.

Picture 11. Dried Noodle

4. **Instant Noodle**

Instant noodle is noodle that has through gelatinitation process, so that for serving this noodle, it is just boiled with boiling water. Instant noodle was made with some additional process after it becomes fresh noodle. The processes are steaming, shaping, and drying. The water content of instant noodle usually reaches 5-8% that makes the storability is quite long.

Picture 12. Instant Noodle

2.3.2 The Nutrition Fact about Noodle

According to Astawan (1999) in Badilangoe (2012), the composition of nutrient contained in every 100 gram of wet noodle are 86 cal of calory; 0.8 gram of zinc; 0.6 gram of protein; 3.3 gram of vitamin A and fat; vitamin B1 (mg); 14 gram of carbohydrate; vitamin C (mg); 13 mg of calsium; and 80 mg of water. While Sutomo (2006) mentioned the composition of nutrient contained in every 100 gram of dried noodle such as 338 cal of calory; 7.6 gram of protein; 11.8 gram of fat; 50 gram of carbohydrate; 1.7 mg of mineral; 49 mg of calcium. From the facts above, it can be concluded that wet noodle and dried noodle have almost same nutrition in every 100 gram of serving but the amount of each nutrition is

different. Wet noodle contains lower calory than dried noodle, but dried noodle contains bigger amount of nutritions that wet noodle.

2.3.3 The Noodle Dough Ingredients

1. **Wheat Flour**

   Wheat flour is smooth powder that is from wheat grain, and used as base ingredient of cake, bread, and noodle. It contains starch substance that is carbohydrate complex which does not dissolve in water. Wheat flour also contains gluten protein that has role for giving elastic texture in food. Wheat flour consist of three kinds of flour such as high protein flour which is use for bread, noodle, doughnut, etc, medium protein flour which is use for cake, and low protein flour which is use for pastries like biscuits, crackers, cookies, etc (Abdillah, 2012).

2. **Rice Flour**

   This flour is made from rice and has white color. Rice flour does not contain gluten and it is really good for people who have sensitivity with gluten (gluten intolerance). There are two kinds of rice flour such as non-glutinous rice flour and glutinous rice flour. The use of rice flour is usually as base ingredients for making rice vermicelli, *banh trang* (rice paper from Vietnam), mochi, *sumsum*, etc (Food Service Today, 2014, p.1)

3. **Tapioca Flour**

   Tapioca was made from grated cassava then squeezed, and the water from the squeezing process was deposited until the starch out. This cassava starch was dried until become flour. Tapioca is usually used as base ingredients for making *sagu mutiara* and as thickener for soup or the filling for pie or tart (Food Service Today, 2014, p.1)

4. **Egg**

   Egg that is used for making kinds of food is chicken egg. The function of egg in dough making process are to help the proofing process, fix the color of the dough, add the nutrition value, give the crispy texture, and bind the other ingredients (Wibowo, 2012)

5. **Salt**

   Salt is white crystal solid substance that contains Natrium Clorida (NaCl) about 80 % and easily to absorb water. Salt is used for household consumption, food industry, oil industry, and preserved and salted fish industry (Sasongko, 2013). Salt has function to strengthen the taste on food and give the delicious taste. The sodium in salt able to manage the liquid balancing in the body, help to strenghten the muscle, and nerve function (Sahabat Hawa, 2013, p.1)

6. **Water**

   The liquid substance that is used for many kinds of dough is water and also another liquid like milk or coconut milk. The function of water in dough making process are to form gluten, to control the temperature, and dissolved salt and sugar (Wibowo, 2012)

2.3.4 The Noodle Dough Making Process

Anonymous (2003) in Badilangoe (2012) says that the noodle making process consists of the steps such as mixing, resting until the dough improves, forming into sheets, cutting, and cooking. Mixing process is to mix all the ingredients become dough that easily to form. Before forming into sheets, the dough is usually rested to make water spread and form gluten. Resting the noodle dough can decrease the rough texture of noodle.Then the forming process by rolling pin or noodle maker can cause the form of gluten fiber become smooth. Sunaryo (1985) in Badilangoe (2012) states that in cooking process, the gluten fiber in noodle dough will be pulled and cover the starch so that the dough will be smooth, stiff, and elasic.

2.4 Definition of Process

According to Ahyari (2002, p.65) in Setiawati (2014), process is a way, method, or technic to do something. Baird (2015) states that "a process is a serie of steps and decisions involved in the way work is completed". Prawira (2007) defined the process as a way, method, and technic about how the current sources such as human, machine, ingredients, and cost were changed to reach a result.

While Tukiran (2013, p.1) states that process is a serie of logic activity that is interconnected and continuosly in turn the input, give the value added, and make it into an output. In short, process is a sequence of activities to make something that involved human, machine, ingredients, and giving the value added of it.

2.5 Recipe Book

Nurzinah (2013) said that recipe book is helping tools for cooking that is a sequences of notes that contains important information about the process of making the definite cuisine following by the tools used and how to serve it. The structure of recipe books are the name of the food, the result including the portion and size, the ingredients needed, the tools needed, the steps of making it, the time needed for preparing and cooking, the way of serving it, and the method of storaging. It is line with Rosalina (2013) who said that recipe book is a guideline that contains the way of processing food including the ingredients needed, the steps, and serving it. Suhaerik (2015) mentioned three purposes of recipe book such as to know the basic of processing food, whether for daily cuisine or occasional cuisine, to develop the current recipe with the new one, and to add the knowledge about food by looking the differences and similarity. So, recipe book is a book that consists of information how to process one food including the ingredients, the steps, and the way of serving it. The purposes of recipe book are to know the basic of processing food, to improve the creativity, and to add the knowledge about food.