

### 3. RESULTS

In this study, all the selected panelists were students and employees of Soegijapranata Catholic University, Semarang. The questionnaires were filled in by panelists to obtain consumer behavior and demographic data.

#### 3.1. Consumer Behaviour

##### 3.1.1. Consumer Behaviour on Aloe Vera Drink Products

Two hundred consumers recognizes the aloe vera drink brands such as Minute Maid Pulpy Aloe Vera, Cap Panda Aloe Vera, and Mogu Mogu Aloe Vera. About 75% consumers notice Minute Maid Pulpy Aloe Vera, and 15% consumers notice Cap Panda Aloe Vera, and also Mogu Mogu Aloe Vera (5% consumers).

The result shows that 10% panelists consume aloe vera once a week, and mostly selected panelists (90%) consume aloe vera drink in different time like once a month, twice or three times a month and etc. Consumer behavior on aloe vera drink can be seen in Figure 5.

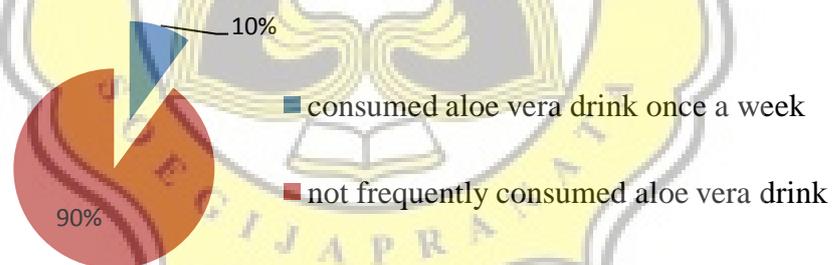


Figure 5. Consumer Behavior on Aloe Vera Drink Products

##### 3.1.2. Consumer Behavior on Ginger Drink Products

Ginger drink products are very popular in Semarang. Intra Ginger Drink is the most recognizable brand. All the panelists had tried previously. However, most of the panelists just taking ginger drink at certain times, such as when they are sick or when the weather is cold. As much as 10% panelists are consuming in uncertain time. About 60% panelists consume ginger drink in the rainy season and 30% panelists consume ginger drink when they were get sick. Ten percents of

panelists also consume ginger drink in once, twice, and three times a month. Consumer behavior on ginger drink can be seen in Figure 6.

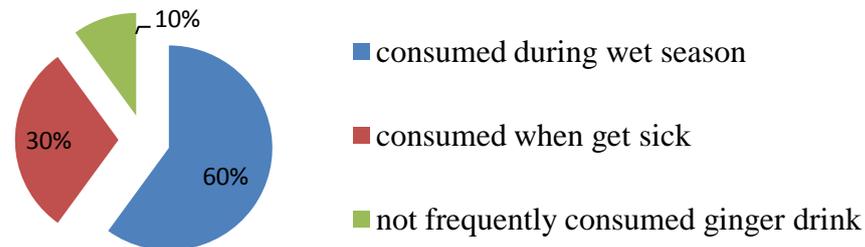


Figure 6. Consumer Behavior on Ginger Drink Products

### 3.1.3. Consumer Behaviour on Mixed Fruit and Vegetable Juice Products

Mixed fruit and vegetable juice have become a trend in recent years. NutriSari brand as the pioneer of mixed fruit and vegetable juice product in Indonesia has been more recognizable by consumers. There are 80% of panelists who recognizes NutriSari products. A total of 20% panelists recognizes Buavita Royale product. However, most of the panelists (70%) consume unbrand mixed fruit and vegetable juice everyday. About 30% panelists consume juice in the restaurant or food court once a week. Consumer behavior on mixed fruit and vegetable juice can be seen in Figure 7.

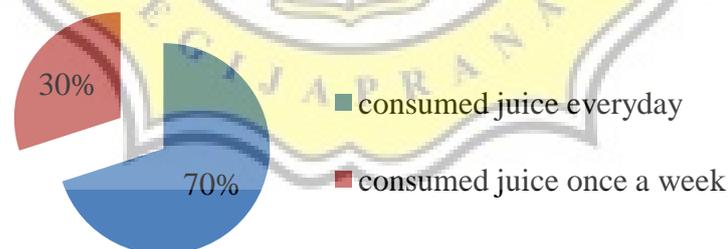


Figure 7. Consumer Behavior on Mixed Fruit and Vegetable Juice Products

## 3.2. Demographic Data

Social demographic such as gender, age, latest education, occupation, and income are factors that influence consumer purchasing of a product and the individual response to the product characteristics. One hundred panelists were participated in this study. The panelists consisted of 66 females and 34 males. Panelist age range

from 15 to 20 years old are 22%, age range from 21 to 25 years old are 77%, and more than 25 years old is 1%.

Most of the selected panelist (75 panelists) were student and employee (25 panelists) of Soegijapranata Catholic University. Based on education, their latest education mostly range from high school (83%) and undergraduated (17%).

Income level is one of the main factors in the purchase of products (Henseleit et al., 2009; Paustian *et al.*, 2016). It is related to the ability to buy a product and food consumption budget. Based on panelists income, they are mostly less than 2 million rupiah per month (95%) and more than 2 million rupiah per month (5%). The distribution of panelists can be seen in Figure 8.

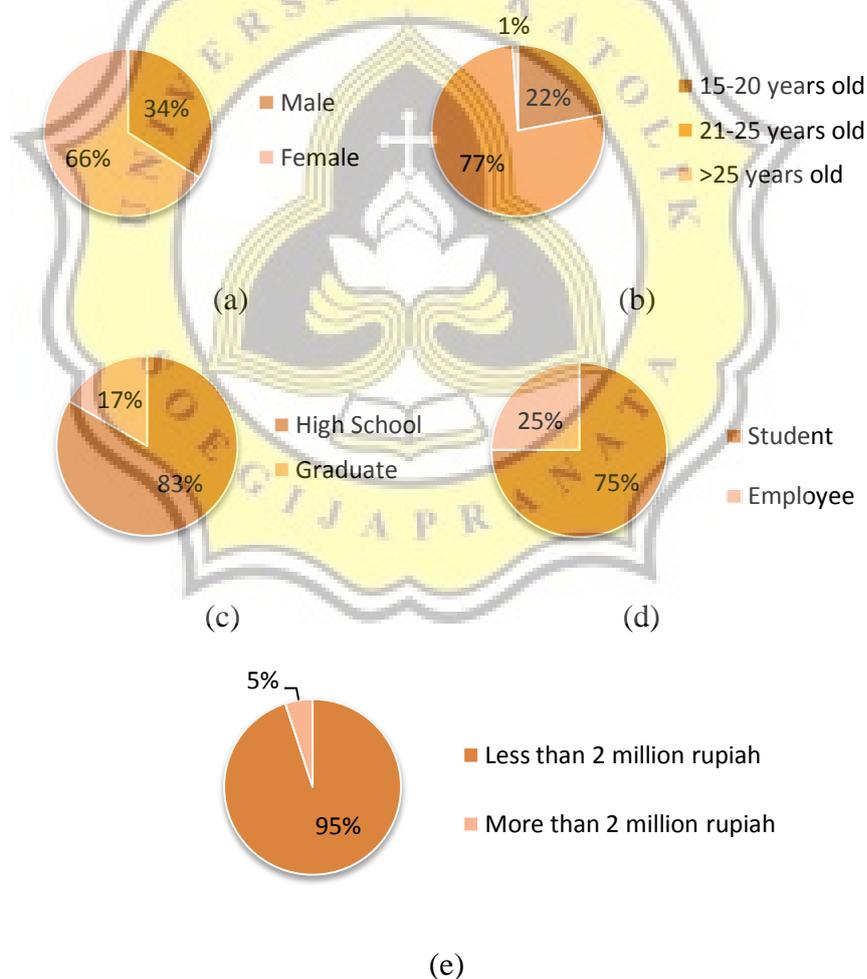


Figure 8. The distribution of Panelist based on (a) Gender, (b) Age, (c) Education, (d) Occupation, and (e) Income

### 3.3. Acceptance Level

#### 3.3.1. Aloe Vera Drink Products

Hedonic scores panelists on aloe vera drink products are presented in Table 2.

Table 2. Hedonic Score on Aloe Vera Drink Products

Sensory Attribute	Product Sample	
	AV-1	AV-2
Overall Liking	6.14 ± 1.39 <sup>a</sup>	6.82 ± 1.23 <sup>b</sup>
Appearance	6.73 ± 1.33 <sup>a</sup>	6.27 ± 1.34 <sup>b</sup>
Color	6.39 ± 1.33 <sup>a</sup>	6.96 ± 1.23 <sup>b</sup>
Aroma	6.50 ± 1.33 <sup>a</sup>	7.02 ± 1.08 <sup>b</sup>
Amount of Aloe Gel	5.63 ± 1.52 <sup>a</sup>	6.70 ± 1.31 <sup>b</sup>
Flavor	6.09 ± 1.62 <sup>a</sup>	6.62 ± 1.19 <sup>b</sup>

<sup>a,b</sup> means samples in the attribute are significantly different at  $\alpha = 0.05$

Table 2 presents mean and standard deviation of consumer liking score of aloe vera drink sensory attributes. All sensory attributes provide a significant difference between the two brands of products. AV-2 sample was preferred based on color, aroma, amount of aloe gel, overall and flavor attribute. AV-1 sample was preferred based on sensory attribute of appearance.

#### 3.3.2. Ginger Drink Products

Hedonic scores of ginger drink products are presented in Table 3.

Table 3. Hedonic Score of Ginger Drink Products

Sensory Attribute	Product Sample	
	GD-1	GD-2
Overall Liking	6.47 ± 1.62 <sup>a</sup>	6.94 ± 1.29 <sup>b</sup>
Appearance	6.23 ± 1.43 <sup>a</sup>	6.76 ± 1.16 <sup>b</sup>
Color	6.13 ± 1.52 <sup>a</sup>	6.80 ± 1.21 <sup>b</sup>
Aroma	6.30 ± 1.48 <sup>a</sup>	6.53 ± 1.53 <sup>a</sup>
Pungency	6.37 ± 1.72 <sup>a</sup>	6.95 ± 1.31 <sup>b</sup>
Taste	6.07 ± 1.84 <sup>a</sup>	7.11 ± 1.36 <sup>b</sup>
Flavor	6.35 ± 1.71 <sup>a</sup>	6.73 ± 1.48 <sup>a</sup>

<sup>a,b</sup> means samples in the attribute are significantly different at  $\alpha = 0.05$

Table 3 presents mean and standard deviation of consumer liking score of ginger drink sensory attributes. The appearance, color, taste, pungency, and overall liking

provide a significant difference between the two brands of products. The aroma and flavor attribute does not provide a significant difference in the two brand products. GD-2 was preferred based on sensory attributes: appearance, overall liking, color, aroma, pungency, taste and flavor.

### 3.3.3. Mixed Fruit and Vegetable Juice Products

Hedonic scores of mixed fruit and vegetable juice products are presented in Table 4.

Table 4. Hedonic Score of Mixed Fruit and Vegetable Juice Products

Sensory Attribute	Product Sample	
	MJ-1	MJ-2
Overall Liking	6.25 ± 1.33 <sup>a</sup>	6.10 ± 1.73 <sup>a</sup>
Appearance	6.51 ± 1.35 <sup>a</sup>	5.88 ± 1.59 <sup>b</sup>
Color	6.53 ± 1.24 <sup>a</sup>	6.17 ± 1.52 <sup>a</sup>
Aroma	5.87 ± 1.30 <sup>a</sup>	6.49 ± 1.62 <sup>b</sup>
Taste	6.06 ± 1.52 <sup>a</sup>	5.90 ± 1.77 <sup>a</sup>
Flavor	6.29 ± 1.27 <sup>a</sup>	6.43 ± 1.53 <sup>a</sup>

<sup>a,b</sup> means samples in the attribute are significantly different at  $\alpha = 0.05$

Table 4 presents mean and standard deviation of consumer liking score of mixed fruit and vegetable juice sensory attributes. The appearance and aroma provide a significant difference between the two brands of products. The overall liking, color, taste and flavor does not provide a significant difference in the two brand products. MJ-1 was preferred based on sensory attributes: appearance, overall liking, color, and taste. MJ-2 was preferred based on the sensory attributes aroma and flavor.

### 3.4. Preference

Preference on all beverage products are provided in Table 5.

Table 5. Preference

Type of Product	Product Sample	Choice Counts
Aloe vera drink	AV-1	34
	AV-2	64
	No preference	2
Ginger drink	GD-1	31
	GD-2	67
	No preference	2
Mixed fruit and vegetable juice	MJ-1	47
	MJ-2	50
	No preference	3

Table 5 presents panelist preference of beverage product. For aloe vera drink products, AV-2 was preferred by 64 panelists and AV-1 was preferred by 34 panelists. About two panelists did not give their preference. On ginger drink product, GD-2 was preferred by 67 panelists. GD-1 was preferred by 31 panelists and there were two panelists who did not give their preference. On Mixed fruit and vegetable juice, MJ-1 was preferred by 47 peoples, and 50 people like MJ-2. About three panelists did not give their preference.

The relationship between panelist demographic and panelist preference on aloe vera drink products is provided in Table 6.

Table 6. The Relationship between Panelist Demographic and Panelist Preference on Aloe Vera Drink products

Demographic Data	Chi-square	P-value
Gender		
	Female	1.699
	Male	0.428
Age		
	15 years-20 years old	10.177
	21 years old-25 years old	0.038*
	Above 25 years old	
Latest Education		
	High school	3.489
	Graduate	0.175
Occupation		
	Student	1.980
	Employee	0.372
Income		
	Less than 2 million	0.136
	More than 2 million	0.934

Note: The analysis was performed at  $\alpha = 0.05$

Table 6 presents the relationship between panelist demographic data and panelist preference on aloe vera drink products panelist preference on aloe vera products. The p-value less than 0.05 indicates the relationship between panelist demographic data and panelist preference. Table 6 shows that there was significant differences between age factor and panelist preference. The p-value was 0.03. It shows that age is affecting factor of consumer preference on aloe vera products.

The relationship between panelist demographic and panelist preference on ginger drink products are provided in Table 7.

Table 7. The Relationship between Panelist Demographic and Panelist Preference on Ginger Drink Products

Demographic Data	Chi-square	P-value
Gender		
Female	1.796	0.407
Male		
Age		
15 years-20 years old	1.751	0.781
21 years old-25 years old		
Above 25 years old		
Last Education		
High school	0.484	0.785
Graduate		
Occupation		
Student	1.015	0.602
Employee		
Income		
Less than 2 million	0.132	0.936
More than 2 million		

Note: The analysis was performed at  $\alpha = 0.05$

Table 7 presents the relationship between panelist demographic data and panelist preference on ginger drink products. The p-value less than 0.05 indicated the relationship between panelist demographic data and panelist preference. Table 7 shows that there were no significant differences between panelist demographic factor and panelist preference. All the p-value were over than 0.05. It shows that demographic factors did not contributes panelist preference in ginger drink products.

The relationship between panelist demographic and panelist preference on mixed fruit and vegetable juice products are provided in Table 8.

Table 8. The Relationship between Panelist Demographic and Panelist Preference on Mixed Fruit and Vegetable Juice Products

Demographic Data		Chi-square	P-value
Gender	Female	2.959	0.228
	Male		
Age	15 years-20 years old	5.064	0.281
	21 years old-25 years old		
	Above 25 years old		
Last Education	High school	0.804	0.669
Occupation	Graduate	1.204	0.548
	Student		
Income	Employee	3.403	0.182
	Less than 2 million		
	More than 2 million		

Note: The analysis was performed at  $\alpha = 0.05$

Table 8 presents the relationship between panelist demographic data and panelist preference on mixed fruit and vegetable juice products. The p-value less than 0.05 indicated the relationship between panelist demographic data and panelist preference. Table 8 shows that there were no significant differences between panelist demographic factor and panelist preference. All the p-value were over than 0.05. It shows that demographic factors did not contribute consumer preference in ginger drink products.

### 3.5. Association between Hedonic and Preference Score

The association between attribute differences score and consumer preference on aloe vera products are provided in Table 9.

Table 9. The Association between Attribute Differences Score and Consumer Preference on Aloe Vera Drink Products

Sensory Attribute	Chi-square	p-value
Overall Liking	2.041	0.728
Appearance	3.628	0.604
Color	4.252	0.514
Aroma	3.192	0.784
Amount of Aloe Gel	3.363	0.762
Flavor	2.597	0.762

Note: The analysis was performed at  $\alpha = 0.05$

Table 9. above shows the chi-square value and p-value of aloe vera drink product sensory attribute. The p-value less than 0.05 indicated the association between sensory attribute and consumer preference. Based on the result, all the p-values more than 0.05. It means that all sensory attributes do not have associations with consumer preference. On the aloe vera drink, the smallest p value was 0.514 on color sensory attributes.

The association between attribute differences score and consumer preference on ginger drink products are provided in Table 10.

Table 10. The Association between Attribute Differences Score and Consumer Preference on Ginger Drink Products.

Sensory Attribute	Chi-square	p-value
Overall Liking	3.139	0.679
Appearance	6.062	0.195
Color	4.010	0.548
Aroma	6.656	0.354
Pungency	4.896	0.298
Taste	1.219	0.976
Flavor	3.296	0.771

Note: The analysis was performed at  $\alpha = 0.05$

From Table 10 above, it can be seen the chi-square value and p-value of ginger drink product sensory attribute. The p-value less than 0.05 indicated the association between sensory attribute and consumer preference. Table 10 shows that there were no significant differences between the sensory attributes to consumer preference. The p-value of all attributes more than 0.05. It shows that all sensory attributes on ginger products did not have association with consumer preference. On ginger drink products the smallest p value was contained in appearance (0.195) and followed by pungency (0.298).

The association between attribute differences score and consumer preference on mixed fruit and vegetable juice products are provided in Table 11.

Table 11. The Association between Attribute Differences Score and Consumer Preference on Mixed Fruit and Vegetable Juice Products.

Sensory Attribute	Chi-square	p-value
Overall Liking	3.294	0.857
Appearance	2.184	0.902
Color	2.577	0.860
Aroma	4.885	0.430
Taste	1.167	0.948
Flavor	2.744	0.739

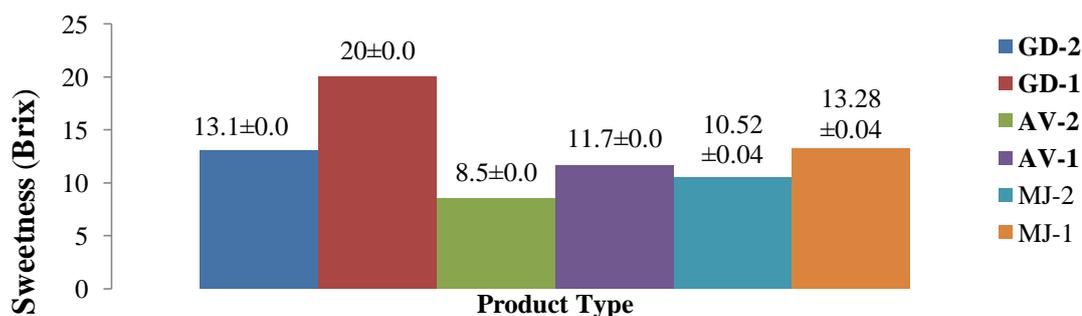
Note: The analysis was performed at  $\alpha = 0.05$

From Table 11 above, it can be seen the chi-square value and p-value of mixed fruit and vegetable juice product sensory attributes. The p-value less than 0.05 indicated the association between sensory attribute and consumer preference. Table 11 shows that on mixed fruit and vegetable juice products, there were no significant differences between the sensory attributes to consumers preference. The p-values of all attributes are more than 0.05. It means that all sensory attributes on mixed fruit and vegetable juice products did not have association with consumer preference. On mixed fruit and vegetable juice products, the smallest p value was contained in the aroma (0.430)

### 3.6. Non Sensory Characteristics

#### 3.6.1. Sweetness

Sweetness of beverage products can be seen in Figure 9.



Notes: Bold fonts mean that the data gathered from five replications were exactly the same

Figure 9. Sweetness of Beverage Products

Figure 9. presents a level of sweetness on products. The sweetness level was measured by digital refractometer. The higher degree of brix means the higher sweetness level of samples. Based on the results, it can be seen that sample GD-1 from ginger drink product category is the highest. Sweetness level on the GD-1 sample was 20 °brix. On aloe vera drink product AV-1 sample (11.7 °brix) is sweeter than AV-1 sample (8.5 °brix). On the mixed fruit and vegetable juice products are only slightly difference between two products. Samples MJ-1 (13.28 °brix) is sweeter than sample MJ-2 (10.52 °brix).

### 3.6.2. Viscosity

Viscosity of beverage products can be seen in Figure 10.



Figure 10. Viscosity of Beverage Products

Figure 10. presents product viscosity. The viscosity was measured by viscotester. The higher viscosity value means that the sample is more viscous. AV-1 sample on aloe vera drink products has the highest viscosity. The lowest viscosity level was contained on ginger drink, GD-2 sample. On the mixed fruit and vegetable juice has slightly difference between the two samples.

### 3.6.3. Color

Color of beverage products can be seen in Table 12.

Table 12. Color of Beverage Products

Product Type	Product Code	L*	a*	b*
Ginger Drink	GD-1	32.06±4.02	0.30±0.20	3.26±0.83
	GD-2	26.65±2.66	1.98±0.52	5.03±0.5
Aloe Vera Drink	AV-1	39.20±1.71	-0.78±0.13	4.51±0.64
	AV-2	40.88±1.0	-0.11±0.04	1.31±0.04
Mixed fruit and vegetable juice	MJ-2	40.3±2.18	4.00±0.22	17.70±1.89
	MJ-1	33.6±0.91	2.81±0.47	10.51±0.82

In Table 13. In CIE system, L indicates the brightness, a\* positive indicates redness level and a\* negative indicates the level of greenness. Furthermore, b\* positive indicates yellowness level and b\* negative indicates blueness level. On ginger drink products, both color sample are light brown, but GD-1 sample color is more brightly than GD-2 samples. On aloe vera products both color samples are transparent, and has small differences color. Samples AV-1 is more yellowish than AV-2. On mixed fruit and vegetable juice products, two samples have orange color. The color of MJ-1 sample is lighter than MJ-2 sample color.