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Research Article

Willingness to Pay and Factors that Influence *Curcuma xanthorrhiza* Use during The COVID-19 in Kiringan Village, Bantul

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Abstract

The Indonesian government officially announced a positive case of a patient exposed to COVID-19 in 2020. The purpose of the study was to determine the characteristics of the community in Kiringan Hamlet, calculate the willingness to pay (WTP) value for temulawak and determine the factors that influence the WTP value during COVID-19. The method used descriptive-analytical non-experimental, which involved distributing questionnaires to consumers and herbal medicine producers in Kiringan Village, Bantul, Yogyakarta. The number that met the inclusion criteria was 276 respondents. The primary data obtained were then analyzed descriptively, followed by a WTP analysis using the contingent valuation modeling (CVM) approach and a factor analysis using regression analysis. The results showed that the age distribution obtained from 69 respondents was 36-45 years old (25%), the majority of female gender with 156 respondents (57%), education level was high school with 137 respondents (50%), 172 people (62%) with income level below 1,000,000.00 IDR, the average WTP value of temulawak was 10,956.52 IDR. In contrast, the total WTP value of temulawak reached 3,024,000.00 IDR. Occupation factors (p=0.004), number of family members (p=0.040), and duration of consumption (p=0.005) also affected the WTP of temulawak.

Keywords: COVID-19; *Curcuma xanthorrhiza*; Kiringan village; Willingness to pay (WTP)

Kesediaan Membayar (WTP) dan Faktor yang Memengaruhi Penggunaan Temulawak pada Masa Pandemi COVID-19 di Desa Kiringan, Bantul

Abstrak

Pemerintah Indonesia secara resmi mengumumkan kasus pasien positif terpapar COVID-19. Tujuan penelitian mengetahui karakteristik masyarakat di Dusun Kiringan, menghitung nilai *willingness to pay* (WTP) terhadap temulawak serta mengetahui faktor-faktor yang mempengaruhi nilai WTP pada Masa Pandemi COVID-19. Metode yang digunakan dalam penelitian ini adalah deskriptif analitik bersifat non-eksperimental melalui penyebaran kuesioner kepada konsumen maupun produsen jamu di Dusun Kiringan, Bantul, Yogyakarta. Jumlah sampel yang memenuhi kriteria inklusi sebanyak 276 responden. Data primer yang diperoleh kemudian dianalisis secara deskriptif, analisis WTP dengan pendekatan *contingent valuation modelling* (CVM) dan analisis faktor menggunakan analisis regresi. Hasil penelitian karakteristik responden menunjukkan sebaran usia yang didapat dari 69 responden berumur 36-45 tahun (25%), mayoritas jenis kelamin perempuan dengan 156 responden (57%), tingkat pendidikan adalah SMA dengan 137 responden (50%), tingkat pendapatan di bawah Rp 1.000.000,00 sebanyak 172 responden (62%), rata-rata nilai WTP temulawak sebesar Rp 10.956,52, sedangkan total nilai WTP temulawak mencapai Rp 3.024.000,00. Faktor pekerjaan (p=0,004), jumlah anggota keluarga (p=0,040), dan durasi konsumsi (p=0,005) memiliki pengaruh terhadap WTP dari temulawak.

Kata Kunci: COVID-19; *Curcuma xanthorriza*; Dusun Kiringan; Kemauan Membayar (*willingness to pay*).

1. Introduction

The number of COVID-19 cases in Indonesia in July 2021, according to the World Health Organization (WHO), was 3.08 million cases. Indonesia is ranked 14th after Iran, with 3.65 million confirmed COVID-19 cases. The Yogyakarta Special Region (DIY) Provincial Health Office in 2020 stated that the distribution of COVID-19 cases had increased in Bantul Regency by 5543 people.[1] On August 11, 2022, the Bantul Regency Government reported 74,378 confirmed COVID-19 patients.[2] The use of herbal medicine in Indonesia, a practice with a long history, is gaining popularity, especially with the development of traditional medicine (additional). Using medicinal plants as raw materials for traditional medicine will increase the body's resistance. Because these plants have unique properties as medicinal plants, they can be prevented and promoted by secondary metabolites. Consuming traditional herbs does not heal but prevents disease by increasing immunity, which is more beneficial for health than curing.[3] *Curcuma xanthorrhiza*, commonly called temulawak, also belongs to the Zingiberaceae family, the community used for treating skin wounds, fever, diarrhea, stomach diseases, and constipation.[4] Temulawak has properties as an appetite enhancer, improves digestive function, nourishes the liver, and relieves joint and bone pain. Temulawak rhizomes are efficacious because they contain chemical compounds, including curcumin, essential oils, saponins, flavonoids, alkaloids, and tannins. Pharmacologically, this plant is reported as antibacterial, antimicrobial, anticancer, antifungal, antacne, and antioxidant.[5]

Active substances in temulawak significantly suppress the production of inflammatory cytokines.[6] Based on research from Lam et al.,[7] presented research results that showed an increase in the use of traditional medicine during the COVID-19 pandemic. The use of one of the traditional medicine options increased previously from 48.4% to 54.1%. In addition, the use of traditional Chinese medicine has also increased from 28.6% to 31%. The efficacy of temulawak can add to appetite in children. *Curcuma longa* is traditionally used as a medicine for stomach ulcers, diarrhea, hemorrhoids, cough, asthma, and mouth ulcers.[8]

Kiringan Hamlet has been known as a village producing herbal products for generations. Kiringan Jamu Tourism Village is one of the traditional herbal centers in the Yogyakarta area, located in Canden Village, Jetis District, Bantul Regency. The products produced in this tourism village are jamu gendong. In Kiringan Tourism Village, there are 4 herbal groups: Seruni Putih, Mekar Sari, Sehat Asri, and Kayu Legi. Out of the 4 herbal groups, there are 132 Micro, Small, and Medium Enterprise (MSME) business actors, both legal entities and individuals.[8]

Although Dusun Kiringan has potential in herbal plant consumers, especially temulawak, as herbal medicine, using temulawak as an immunostimulant, especially the interest in buying, has yet to be discovered. For this reason, it is necessary to determine a suitable pricing strategy for consumers, so research is needed that discusses how much consumers are willing to pay (willingness to pay or WTP) for temulawak. The WTP is used to find the highest amount consumers are willing to pay to improve product quality. The immune system is changing; it can increase or decrease. Age, nutritional intake, vitamins, minerals, hormones, physical activity, and emotional state influence the body's immunity.[9] A study by Towoliu and Tumbuan[10] found that family is the independent factor affecting WTP. In addition to analyzing demographic factors on WTP, the difference in this study was that additional variables were examined, namely using temulawak herbal plants. The purpose of this study was to understand the characteristics of respondents in the Bantul community, measure the WTP value for traditional medicine temulawak as an immunomodulator, and explore the relationship between WTP and respondent characteristics during the COVID-19 pandemic in Kiringan Hamlet, Canden Village, Jetis District, Bantul Regency, Yogyakarta.

Circular Letter number

HK.02.02/1V.2243/2020 concerning the Utilization of Traditional Medicines for Health Maintenance, Disease Prevention, and Health Care shows that traditional medicine can be used during the emergency period of COVID-19. This can increase cross-sectoral cooperation and local governments related to using medicinal plants as traditional medicine. Based on the explanation above, we are interested in knowing the characteristics of temulawak (*Curcuma xanthorrhiza*) consumers, as well as the value of willingness to pay or willingness to pay (WTP) temulawak.

2. Methods

2.1. Tools and Materials

Data collection in this study used a survey method, and the tool used was a questionnaire to obtain primary data.[11,12] The tool used in this study was a questionnaire sheet that has been tested for validity and reliability. This study used a questionnaire tool: descriptive analysis, contingent valuation modeling (CVM), and statistical analysis of correlation relationships. The questionnaire contained 10 questions for personal information and 5 questions for the WTP variable. The CVM used in this study was a questionnaire adopted from research conducted by Manalu12 and developed based on the average price per kilogram of temulawak circulating in Bantul Yogyakarta.

2.3. Procedures

2.3.1. Location and Time of Research

This research was conducted in Kiringan Hamlet, Canden Village, Jetis District, Bantul Regency, Special Region of Yogyakarta. This location was chosen because Canden Hamlet was a center for herbal medicine producers in Bantul and most of the local community also used herbal preparations. Sampling began in July 2022 until September 2022.

2.3.2. Method of Collecting Data

This research method used was an analytical survey (non-experimental). The survey method was defined as research that used a small population or a large population, while the data obtained from the sample found the relationship between variables, sociology and psychology, relative incidence, and distribution.[11]

By distributing questionnaires to respondents, primary data were obtained, which were used to analyze the willingness to pay for temulawak to respondents who were consumers and producers of herbal medicine. In this study, the consent of the patient or the patient's family was requested. In the informed consent agreement, the researcher provided information regarding infections caused by coronavirus (COVID-19) and the benefits of temulawak as an immunostimulant before completing the questionnaire. This study obtained an ethical approval letter from the research ethics committee of Ahmad Dahlan University, Yogyakarta, with the reference number 022211085.

2.3.3. Respondent Determination Method

The population in this study was the people in Kiringan Hamlet, Bantul Yogyakarta, who were both herbal medicine craftsmen and consumers. The respondent population was calculated based on population data in Kiringan Hamlet, totaling 891 residents. The sampling technique was carried out through random sampling, which was selected based on inclusion and exclusion criteria. The inclusion criteria in this study included the people of Kiringan Hamlet who had an Indonesian Identity Card (KTP), were at least 17 years old, and were willing to fill out the questionnaire. Meanwhile, the exclusion criteria involved respondents who were deaf and mute. Furthermore, the determination of the number of respondents was carried out based on calculations using the Slovin method approach as follows:

$$n = \frac{N}{1 + N\,(d^2)}$$

$$n = \frac{891}{1 + N\,(5\%^2)}$$

$$n = \frac{891}{3{,}2275}$$

$$n = 276$$

Description :
N = number of population
n = number of samples
d = alpha or sampling error = 5% = 0.05

Sampling was carried out using the Slovin method, and 276 respondents were obtained based on calculations. The questionnaires were distributed directly in Kiringan Hamlet, Bantul, Yogyakarta.

2.3.4. Willingness To Pay (WTP)

Yakin (2015) explained that the CVM approach was a method that uses survey techniques to directly ask individuals or families about the value or price they give to goods or services that do not have a market, such as environmental goods if the market did exist or if there was an alternative form of payment such as a tax imposed.13 This study carried out an operational stage to obtain the WTP value.

a. Hypothetical Market

A hypothetical market was formed by providing an overview of the temulawak plant to increase body immunity and prevent exposure to COVID-19 virus infection. This hypothetical market aimed to build respondents' perceptions of temulawak as the herbal plant that had benefits as an immunostimulant and its urgency for survival during the pandemic.

b. Determining the WTP Auction Value

The WTP value of temulawak was obtained by conducting a direct interview with herbal medicine artisans and consumers. The initial value (starting point) was the average price circulating in Bantul Yogyakarta, 10,000 IDR/kilogram. In this study, respondents were given an offer of the WTP value of temulawak using the open-ended question method, and there were open questions.

c. The calculation of the estimated average WTP value

The WTP value of temulawak as an immunomodulator was calculated with the following equation:[14]

$$EWTP = \sum_{i=1}^{n} W_i(Pfi)$$

Description :
EWTP = Average value of WTP
Wi = The value of the i-WTP
i = the ith respondent who was willing to pay
n = number of respondents
Pfi = Relative value of respondent i

d. Estimating the WTP curve

The WTP curve in this study connects the WTP value that respondents are willing to pay with the cumulative frequency of the respondent's willingness to pay more for temulawak.

e. Data aggregation of total WTP (TWTP)

This value is obtained from the average value converted to a population. The total WTP value of temulawak as an equation is as follows:[14]

$$TWTP = EWTP \times P$$

Description :
TWTP = Total WTP (in Rupiah)
EWTP = Average WTP value-i (IDR/kg)
P = Total population
i = Respondent i who have willing to pay (i = 1,2,3,..n)

2.3.5. Analysis of Factors Related to Willingness to Pay for Temulawak

Descriptive statistical analysis was used to determine the factors influencing the willingness to pay for temulawak. The selection of factors studied was based on factors significantly affecting the willingness to pay for temulawak using SPSS version 27 program analysis with a simple linear regression test, with $p<0.05$ considered as significant. In this analysis, independent variables were determined that were suspected of influencing the dependent variable (WTP value):

– Variable Factor characteristics of respondents: age, gender, education, income, occupation, and number of

family members.
– Variable actions for using the herbal plant Curcuma, namely the duration of consumption and the distance to obtain the Curcuma plant.

3. Results and Discussion

3.1. Respondent Characteristics

This research was conducted in the Jamu Tourism Area of Kiringan Hamlet, Bantul, Yogyakarta. The results of the analysis of respondent characteristics based on socio-demographic conditions are shown in Table 1. The number of residents in Kiringan Hamlet was based on gender, revealing that the number of female residents was greater than that of male residents. Females had 156 respondents (58.92%), and 120 respondents (41.91%) were male. Based on the highest level of education, respondents were in senior high school as many as 136 respondents (46.89%) and diploma education as many as 5 respondents (1.66%). Respondents based on income level were mostly < 1,000,000 IDR as many as 172 respondents (62.55%) while income level > 3,500,000 IDR, as many as 4 respondents (1.45%). Based on the number of family members, 107 respondents (40.25%)

Table 1. Characteristics of Respondents

No.	Characteristic	Frequency	Percentage (%)
1.	Gender		
	Man	120	41.91
	Woman	156	58.92
2.	Age (year)		
	17-25	46	17
	26-35	52	19
	36-45	69	25
	46-55	47	17
	56-65	48	17
	>65	14	5
3.	Education		
	No school	21	8.3
	Elementary School	65	25.31
	Junior High School	42	16.18
	Senior High School	137	46.89
	Diploma	5	2.07
	Undergraduated Degree	6	1.66
4.	Income (IDR)		
	< 1.000.000	172	62.55
	1.000.000 – 2.000.000	85	30.55
	2.000.000 – 3.500.000	15	5.45
	>3.500.000	4	1.45
5.	Work		
	Student	30	10.87
	Civil Servant	4	1.45
	Private Employees	21	7.61
	Self-Employed	36	13.04
	Farmer	20	7.25
	Labour	106	38.41
	Other	59	21.38
6.	Number of Family Members		
	1	31	12.45

No.	Characteristic	Frequency	Percentage (%)
	2-3	107	40.25
	4	89	30.71
	5	40	12.86
	6	6	2.49
	>6	3	1.24
7.	Consumption Duration (years)		
	Never	61	21.58
	1-5	90	34.85
	6-10	32	9.96
	11-20	30	9.96
	>20	63	23.24
8.	Distance to Acquire		
	<1 km	251	91.27
	1-2 km	20	6.91
	2-4 km	4	1.45
	4-5 km	1	0.36

had 2-3 family members, and 3 respondents (2.49%) had more than 6 family members. Respondents based on the length of time-consuming temulawak for 1-5 years were 90 respondents (34.85%), while the length of time-consuming temulawak for 6-10 years and 11-20 years were 30 respondents (9.96%). Respondents based on the distance of obtaining temulawak mainly were at a distance of <1 km as many as 251 respondents (91.27%), and the least respondents got temulawak at a distance of 4-5 km as many as 1 people (0.36%).

3.2. Description of Willingness to Pay for Temulawak Traditional Medicine

An analysis of the willingness to pay for temulawak during the COVID-19 pandemic in Bantul, Yogyakarta, was conducted using the CVM approach. The results showed that the total benefits of temulawak traditional medicine are as follows.

3.2.1. Hypothetical Market

A hypothetical market was formed by providing an overview of the temulawak plant, which increases body immunity and prevents exposure to the COVID-19 virus. The hypothetical market in this analysis resulted in a description of the types of traditional medicines that were often used from the hypothetical market in this study to confirm directly what is the maximum value (price) for the respondent's willingness to pay for traditional medicine, namely temulawak during the COVID-19 pandemic in Kiringan Hamlet, Bantul, Yogyakarta.

3.2.2. Determining the WTP Auction Value

Analysis of willingness to pay (WTP) of temulawak questionnaires was given to 276 respondents in Bantul, Yogyakarta. In this study, respondents provided WTP temulawak offers in large quantities using the bidding method by asking respondents whether they were willing to pay a certain amount of WTP with a specific price increase. The starting point price for temulawak was 10,000.00 IDR per kilogram (first offer). Furthermore, respondents were asked to answer “yes” or “no” willing to pay with a price increase of 20%, 30%, 40%, 50%, and ≥50%. There were open questions to measure the maximum value to respondents, such as whether they were willing to be paid or if they were willing to buy temulawak for health.

Based on Table 2, the results of the price increase scenario of 20%, 30%, 40%, 50%, and ≥50%, it was found that with a high tolerance of respondents to price increases of 20%, while increases ranging from 30% to >50%, the willingness to pay decreased. According to Priambodo and Najib,[15] an increase in income will affect the consumption

Table 2. Willingness to Pay for Traditional Medicine Based on Increments

Respondent's willingness to pay	% willing to pay with an increase (frequency)					
	Bidding I (10,000 IDR)	Increase 20%	Increase 30%	Increase 40%	Increase 50%	Increase ≥50%
Yes	71.64% (198)	48.73% (134)	29.45% (81)	21.45% (60)	18.55% (52)	16.73% (47)
No	28.36% (78)	51.27% (142)	70.55% (195)	78.55% (216)	81.45% (224)	83.27 (229)
Total	100% (276)	100% (276)	100% (276)	100% (276)	100% (276)	100% (276)

patterns of the community, and based on the community's income level, the largest is <1,000,000 IDR by 62.55%.

Respondents were unwilling to pay for several specific reasons (Table 3). This study distributed the reasons respondents were reluctant to pay for temulawak as a traditional plant ingredient to increase body immunity. Data analysis showed that the main reason for unwillingness to pay was economic factors, expressed by 234 respondents (84.73%). This result was in line with the findings of previous studies, which stated that financial limitations are the main barrier in making purchasing decisions, especially for needs that are considered not urgent. 16 A total of 26 respondents (9.45%) chose drugs or other goods as alternatives, indicating a preference for options that are considered more affordable or practical. Meanwhile, 11 respondents (4.00%) stated other unclassified reasons.

According to a study by Nissa,[17] many people choose to consume herbal drinks because of their proven benefits for the body. Based on the analysis of willingness to pay because of health awareness, as much as 63.64% while the economic reason was the affordable price of herbal drinks by 31.64% (Table 4). Respondents were unwilling to pay due to economic reasons or high prices, as much as 84.73%. During the COVID-19 pandemic, consuming herbal medicines can help increase body immunity. Consuming natural ingredients that contain bioactive compound components that have activity as antivirals and immunomodulators.[18]

The distribution of maximum WTP based on demographic factors provided essential insight into the variation in the value individuals within a given demographic group are willing to pay. The data showed that the 17–25 age group had an average maximum WTP of 12,184.8 IDR, while the male gender category showed an average maximum WTP of 11,666.67 IDR. Education level was also a significant factor, with individuals with no formal education (no school) recording the highest maximum WTP of 15,095.24 IDR. Those with incomes of less than 1,000,000 IDR have an average maximum WTP of 14,500.00 IDR, similar to the student job category, which also reaches a value of 14,500.00 IDR (Table 4). These results reflect

Table 3. Frequency Of Reasons For Willingness And Unwillingness

No.	Reason Unwillingness	Frequency	%
1	Economic	234	84,73
2	Religious	5	1,82
3	Medicine/other goods as alternatives	26	9,45
4	Others	11	4,00
	Total (∑)	276	100%
No	**Reason Willingness**		
1	Economic	87	31,64
2	Religious	3	1,09
3	Self-Awareness of Health	176	63,64
4	Others	10	3,64
	Total (∑)	276	100%

Table 4. Distribution of WTP based on Demographic Factors

Demographic	Category	WTP Maximal Temulawak (mean IDR)
Age	17-25	2,184.8
	26-35	0,567.3
	36-45	10,441.2
	46-55	11,333.3
	56-65	10,906.3
	>65	9,857.1
Gender	Male	11,666.67
	Female	10,445.16
Education	No School	15,095.24
	Elemtary School	10,561.54
	Junior High School	11,360.47
	Senior High School	10,540.15
	Diploma	11,600.00
	Bachelor Degree	6,250.00
Income	<1,000,000	14,500.00
	1,000,000 – 2,000,000	6,875.00
	2,000,000 – 3,500,000	11,190.48
	≥3,500,000	9,888.89
Work	Student	14,500.00
	Civil Servant	6,875.00
	Private Employer	11,190.48
	Self Employer	9,888.89
	Farmer	11,075.00
	Labour	10,787.74
	Other	10,353.45

how factors such as age, gender, education, income, and employment status influence an individual's willingness to pay for a good or service, in line with findings in previous studies that highlight the significant role of demographic factors in economic decisions.[19]

3.2.3. Calculating Estimating Mean WTP (EWTP)

The results of the calculation of the maximum average WTP can be seen in Table 5 below.

The average Willingness to Pay (WTP) value during COVID-19 in Kiringan Hamlet for the average value of temulawak was 10,956.52 IDR. The average value of temulawak showed a consumer surplus because the willingness to pay (WTP) value was higher than the average WTP value of 956.52 IDR at the offered price of 10,000.00 IDR per kilogram. Temulawak had the lowest maximum average value due to the relatively lower amount of product consumption or type, which ranges from 500.00 IDR to 60,000.00 IDR. This shows that the price of temulawak as an immunomodulator is still relatively affordable. Respondents are still willing to pay the price range of 10,000 IDR (first bidding).

3.2.4. Aggregate Total Data

The next stage is to measure the total aggregate data. The total aggregation of WTP temulawak is the total value all respondents are willing to pay in the study. The WTP aggregation is obtained by using the average WTP value converted to the respondent population of the WTP value. Based on Table 5, the average value (mean) was 10,956 IDR, then the average value is multiplied

Table 5. Estimating Mean WTP of Traditional Medicine

No. (i)	WTP (IDR) (w)	Number of Respondent (n)	Frequency Relative (Pfi) %	EWTP (w.Pfi) (IDR)	Total WTP (w.n) (IDR)
1	500	3	0.011	5	1500
2	2000	1	0.004	7	2000
3	2500	1	0.004	9	2500
4	3000	5	0.018	54	15000
5	4000	19	0.069	275	76000
6	5000	64	0.232	1159	320000
7	6000	8	0.029	174	48000
8	7000	6	0.022	152	42000
9	8000	6	0.022	174	48000
10	10000	77	0.279	2790	770000
11	11000	3	0.011	120	33000
12	12000	17	0.062	739	204000
13	15000	21	0.076	1141	315000
14	17000	2	0.007	123	34000
15	18000	1	0.004	65	18000
16	20000	24	0.087	1739	480000
17	25000	7	0.025	634	175000
18	30000	6	0.022	652	180000
19	40000	1	0.004	145	40000
20	50000	2	0.007	362	100000
21	60000	2	0.007	435	120000
Total (∑) (IDR)		276	1.00	10,956.52	3,024,000.00
Mean (IDR)					10,956.52
Median (IDR)					10,000

by the number of respondents 276, and the result shows the Total WTP. This WTP will benefit traders because it can be used as data on sales value and the highest value consumers want to receive for temulawak plant products. The aggregate total data, or TWTP, is obtained from the average WTP of temulawak multiplied by the population, so the WTP aggregation is obtained at 3,024,000 IDR. The WTP aggregation value is used to get information about the sales value at the maximum price consumers are willing to pay. Based on the results of the analysis above, using data on the number of residents living in Kiringan Hamlet, Bantul, Yogyakarta, the Total Data Aggregate Value was calculated, showing that the total ability of respondents from Kiringan Hamlet to pay for temulawak as an Immunomodulator (TWTP) was 3,024,000 IDR. Calculating WTP aggregation is to see the potential price that can be developed by determining the average value of consumer WTP.[20] Temulawak has a low price and frequency of purchase by respondents; namely, only 6 out of 276 respondents bought at an offer price of 10,000 IDR per kilogram. The difference in value is due to differences in price and the maximum value respondents are willing to pay. This is in line with the opinion of Krystallis and Chryssohoidis 2020,[21] which states that the maximum WTP value and its aggregation depend on the type and price of the product itself.

3.3. Factors that influence WTP

Table 6 above showed the results of linear

regression analysis between the independent and dependent variables. The result of the significance value of the employment variable of 0.004, which was smaller than 0.05, showed that employment correlated with the WTP value. The significance value of the number of family members variable is smaller than 0.05, which is 0.04, which means there is a correlation between the number of family members and the WTP value. In addition, there is a correlation between length of consumption and a WTP value smaller than 0.05. This shows an influence between the length of consumption and the WTP value.

There was a significant relationship between occupation and WTP for Temulawak as an immunomodulator during the COVID-19 pandemic with a p-value of 0.004. Work is related to a person's income. This will affect the ability to pay for temulawak. The type of work affects the high and low income of the head of the family; the better the kind of work done, it will provide a decent or high income for the work done.[22] Jobs with high family head income can achieve various aspects of improving health, including the ease of using quality traditional medicines.[23]

Demonstrated a significant relationship between the number of family members and Temulawak's WTP as an immunomodulator during the COVID-19 pandemic, with a p-value of 0.04. The variable number of family dependents has a negative and significant effect on willingness to pay for adaptation to the impacts of climate change; the more dependents the respondents have, the more unwilling they are to pay adaptation costs. This is because when respondents have more dependents, more living expenses are needed, thus making respondents increasingly reluctant to pay the cost of climate change adaptation.[22]

Length of consumption significantly affects consumers' willingness to pay for temulawak with a positive relationship. The results of this study confirmed the hypothesis that the length of consumption had a positive and significant effect on the willingness to pay for temulawak. Sunyoto (2014) reported that a person's interpretation of an event based on experience affects perception.[24] The longer consumers consume temulawak, the more consumers will feel the benefits of temulawak for health. This supports the opinion of Fathia et al. (2018), who suggest that habits determine consumer attitudes toward a product.[25]

4. Conclusion

The results showed the characteristics of respondents, namely the distribution according to age, namely 68 respondents aged 36-45 years (26.14%), the dominant gender was female as many as 156 respondents (58.92%), the highest level of education was high school as many as 137 respondents (46.89%) and the highest income level of 172 respondents (62.55%) was <Rp 1 million. The average WTP value of temulawak was 10,956.52 IDR, or the total WTP value was 3,024,000.00 IDR. Factors significantly influencing willingness to pay for temulawak were occupation, number of family members, and length of consumption, while age, gender, education, and distance to obtain have no significant effect.

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