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Analysis of willingness to pay in improving the quality of biopesticide products based on green economy

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Abstract
This study aims to estimate the value of Willingness to Pay and identify the influence of factors on WTP in improving the quality of green economy-based biopesticide products in Candiwatu Village, Pacet District, Mojokerto Regency. The method used is quantitative descriptive analysis with the Accidental Sampling technique. Data analysis was carried out using the Contingent Valuation Method and multiple linear regression. The results of the study showed that the average additional nominal that the community was willing to pay for quality green economy-based biopesticide products was IDR 32,000. From the multiple linear regression test, it was found that partially three variables that significantly influenced WTP were agricultural land area, income, and biopesticide product quality. Simultaneous testing showed that all variables had a significant influence on WTP. These findings indicate that the community has a willingness to pay to support the use of environmentally friendly products that can increase the proportion of sustainable fertilizers, with income, land area, and product quality being the main aspects driving the decision.

Keywords: Biopesticides, Green Economy, Product Quality, Willingness to Pay

Abstrak
Penelitian ini bertujuan untuk memperkirakan nilai Willingness to Pay WTP dan mengidentifikasi pengaruh faktor-faktor terhadap WTP dalam meningkatkan kualitas produk biopestisida berbasis ekonomi hijau di Desa Candiwatu, Kecamatan Pacet, Kabupaten Mojokerto. Metode yang digunakan adalah analisis deskriptif kuantitatif dengan teknik Accidental Sampling. Analisis data dilakukan menggunakan Contingent Valuation Method dan regresi linier berganda. Hasil penelitian menunjukkan rata-rata tambahan nominal yang bersedia dibayarkan masyarakat untuk produk biopestisida berkualitas berbasis ekonomi hijau adalah Rp32.000. Dari uji regresi linier berganda, ditemukan bahwa secara parsial tiga variabel yang signifikan memengaruhi WTP adalah luas lahan pertanian, pendapatan, dan kualitas produk biopestisida. Pengujian secara simultan menunjukkan bahwa seluruh variabel memiliki pengaruh signifikan terhadap WTP. Temuan ini mengindikasikan bahwa masyarakat memiliki kesediaan membayar untuk mendukung penggunaan produk ramah lingkungan yang dapat meningkatkan proporsi pupuk berkelanjutan, dengan faktor pendapatan, luas lahan, dan kualitas produk menjadi aspek utama yang mendorong keputusan tersebut.

Kata kunci: Biopestisida, Green Economy, Kualitas Produk, Willingness To Pay

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1. Introduction

The Green Economy issue is currently an important thing to pay attention to. UU RI No.3 of 2014 explains that the existence of a green industry must have a production process that prioritizes effectiveness and efficiency in the use of resources based on environmental sustainability and providing benefits to society (Waluyo et al., 2022). A green economy can also be said to be a reduction in energy consumption from traditional energy sources, energy sources and efficiency from new and environmentally friendly energy sources (Cai, 2023). The trend towards a green economy is needed to reduce pollution, pollution and reduce CO2 emissions, thereby supporting the goals of a green economy, so projects are needed including products that are created to be environmentally friendly. The government also needs to support making laws to control actions that are detrimental to the environment (Younas et al., 2023). Implementing the green economy concept in the agricultural sector can help reduce excessive use of pesticides and chemical fertilizers, so that environmentally friendly pesticide products are needed (Susila & Hukom, 2023).

In connection with the current global warming, staple crops such as rice, corn, beans, vegetables and so on are experiencing increasing pest attacks. In dealing with these pest attacks, quite a few farmers use chemical termiticides which have harmful effects on the environment (Annick, 2024). Chemical pesticides that are currently widely used by the public have high potential for harm to human health and the environment, so an alternative way to control pest populations that is safe and environmentally friendly is by using biopesticides. Good quality biopesticide products must be supported by public awareness of the threat of toxicity and the development of resistance posed by pesticides (Dunan et al., 2023). Good product quality must have the ability to generate purchasing interest that is in line with people's desires and even exceeds their expectations, so it is very important to pay attention to the quality of biopesticide products in order to encourage a sense of willingness to pay for the community (Ashriana & Fitriyani, 2020).

Willingness to pay for certain products is currently widespread in society, where people are willing to pay, including for green labeled products such as biopestides. Biopesticides offered at low prices will gain benefits and wider market acceptance, this will have a positive impact if people are aware of the dangers of products that are not environmentally friendly (Firdaus, 2023). The importance of public awareness of the dangers of chemical fertilizers, which can reduce land productivity and environmental quality, can make people willing to pay for organic agricultural products. This makes farmers switch from using chemical fertilizers to organic fertilizers (Rachmah et al., 2020). Therefore, it is important to know whether people are willing to pay to increase the proportion of environmentally friendly organic fertilizers, and it is necessary to know the main factors that influence their willingness to pay (Azlina et al., 2022).

Candiwatu village is one of the villages in Pacet sub-district, Mojokerto district, where the area is drained by the Kromong II watershed whose headwaters are on the slopes of Mount Welirang. The problem phenomenon that occurs is land degradation

due to agricultural intensification, where the input of materials used in cultivating agricultural crops is carried out on a large scale with the aim of obtaining large profits in agricultural products. However, the pesticides used to support agricultural products are chemical pesticides, resulting in increased pesticide residue loads. In addition, pesticide residues cause air pollution carried by irrigation canals. This condition also causes plants to experience denitrification, volatilation and leaching. Based on preliminary interviews conducted with 15 people regarding the percentage of pollution, the data obtained is in Table 1.

Table 1. Percentage of Pollution

Numb	Questions	Yes	Neutral	No
1.	Residential premises are affected by pollution	73,3%	0%	26,7%
2.	There has been a decline in soil and air quality	80%	13,3%	6,7%
3.	Effects of contamination on the environment and health	100%	0%	0%
4.	Be aware that pesticides are a source of pollution	66,7%	0%	33,3%

Source: Candiwatu Village (2024)

From the table 1 above, it can be seen that 73.3% of the respondents' residences were affected by pollution, 80% of the areas experienced a decline in soil and air quality, 100% of the pollution had an impact on the environment and health, and 66.7% of respondents were aware that the source of the pollution came from specifications used. This means that more than 50% of respondents felt that pollution was occurring in the Candiwatu area.

This problem is very dangerous for the environment, so it is necessary to provide understanding to the Candiwatu village community that the use of pesticides can be switched to environmentally friendly biopesticides. This is because people do not understand the importance of a green economy in the use of pesticide products, in order to minimize the use of chemical pesticides, so awareness is needed in terms of willingness to pay so that in the future people use biopesticides made from organic ingredients which can help prevent environmental pollution.

Previous research conducted by Ulfa et al., (2023) stated that by using the Contingent Valuation Method (CVM) and multiple linear regression, the average value of willingness to pay for organic red rice products in Surakarta City was Rp. 33,264/kg. The variables age, trust, scarcity, income, health awareness and environmental health have a positive influence on the Willingness To Pay value, while the variables of number of family members, conspicuous consumption and gender have no influence on the Willingness To Pay value. Pujiastuti et al. (2023) also explained that using the Contingent Valuation Method (CVM) and Linear Regression approach, the results obtained were that 90.24% of people were willing to pay for raw organic chicken products with an average WTP value of 10% higher than the current price. Factors that significantly influence Willingness To Pay include income, education, and reasons for buying organic chicken. Rasyda & Santosa (2023) also explained that using the Contingent Valuation Method (CVM) and Binary Logistic Regression, the results

showed that the Muslim community in Depok District was willing to pay for halal processed meat products with an additional nominal value of IDR. 2,437 per 500gr packaging. The variables that influence Willingness To Pay are attitude, perception, self-control, religious self-identity, and religiosity, while the subjective norm variable has no effect.

Based on the description above, research was conducted with the title Willingness To Pay Analysis of the Quality of Green Economy Based Biopesticide Products. The aim of this research is to estimate the value of people's willingness to pay for biopesticide products and find out whether factors have an influence on Willingness To Pay in improving the quality of biopesticide products based on a green economy. Therefore, it is hoped that this research can help the public understand the importance of biopesticide products as organic fertilizers that do not pollute the environment in Candiwatu Village, Pacet District, Mojokerto Regency.

2. Literature Review

Green Economy

Green economy is a level of economy and resources that emphasizes an environmental approach, so that it is possible to create synergies in opening up great opportunities for economic, social and environmental conditions for society (Munot, 2022). The existence of a green economy concept in a product can improve its quality, because the focus of the product is on the impact of environmentally friendly actions (Trung & Hung, 2022). The impetus for achieving green economic growth can refer to technology and consumption patterns that can create jobs and reduce the impact on the environment, so that the concept of a green economy can be an indicator in an environmental economy that is more efficient, environmentally friendly, and technology that can save resources that impact can be felt both in the short and long term climate (Prabawati, 2022).

Product Quality

Product quality is a condition where the physical, functional and properties of goods or services have the expected qualities such as durability, reliability, ease of operation and other attributes with the aim of meeting consumer or customer needs. This is because consumers want quality products according to what they pay (Sudirjo et al., 2023). The importance of quality in a product is expected to build strong relationships with consumers to increase customer loyalty. Good product quality can increase the effectiveness and efficiency of resources, as well as optimize resource use, making it beneficial for users (Baali et al., 2023). Therefore, product quality can be defined as the customer's assessment of the overall superiority of the product. There are 8 (eight) indicators in the product quality dimensions, namely, features, reliability, durability, suitability, serviceability, aesthetics and perceived quality (Marwanto et al., 2022).

Biopesticides

Biopesticides are organic pesticides made from plant extracts which have a protective effect on plants, low residue effects and are environmentally friendly (Homayoonzadeh et al., 2022). Biopesticides can be used in several ways, such as repellency, knock-

down, larvacide to anti-feedant, moulting inhibitor, and growth regulation. This method can be done because the impact of toxins that pollute the environment is very little or even non-existent (Ekenwosu et al., 2021). Organic pesticide products are now important in protecting plants and increasing crop yields. Biopesticides can be divided into 5 (five) types, namely herbicides, insecticides, fungicides, rodenticides and nematicides. Biopesticides are very effective for use on plants and minimize pollution (Patidar & Khan, 2023).

Willingness To Pay

Willingness to pay is the willingness of the community to eliminate imbalances in the products they obtain, so that the community accepts the burden of payment in accordance with the amount that has been determined. This willingness to pay is useful for protecting consumers from the dangers of companies that monopolize the price of providing quality products (Anjarwati & Juanita, 2021). Willingness to pay is part of the willingness to pay to get environmentally friendly products. Willingness to pay is done to avoid people getting low quality products (Oesman et al., 2024). Therefore, the willingness to pay can be said to be the highest price for someone (society) who is willing to provide benefits in the form of goods or services. paying for an environmental condition or assessment of natural resources due to changes in environmental quality (Sari et al., 2024).

3. Methods

This research uses quantitative descriptive analysis methods, according to Ulfa et al., (2023) that descriptive analysis explains what the findings obtained during the research are. Sari et al., (2024) Meanwhile, the quantitative approach is an approach using numbers, starting from data collection, data analysis, to the results obtained. Therefore, descriptive analysis is quantitative which describes the analysis of variables as they are using data in the form of numbers. The research location was carried out using a purposive method, according to Afriani et al. (2020) that the purposive method was carried out deliberately based on considerations and research objectives. The research location is Candiwatu Village, Pacet District, Mojokerto Regency. The research variables used are independent variables, namely education, family members, agricultural land, expenses of pesticide, income, venture capital, operating profit, and quality of biopesticide. While the dependent variable used is willingness to pay.

Determining the sample in the study used Accidental Sampling. According to Fitriyani (2021) that accidental sampling is used for respondents who are met by chance or incidentally to meet the researcher and is appropriate to the research context. For a research population of 30 people, using a saturated sample, the sample used is also 30 people. The data collection method was carried out by distributing questionnaires to 30 respondents, interviews with village heads, heads of farmer groups and respondents, as well as searching for national and international journals and articles as reference material. Before the questionnaires were distributed, respondents underwent a pretest to ensure representativeness and eligibility for this research (Hanif, 2024).

The data analysis technique was carried out using 2 (two) approaches, namely the Contingent Valuation Method (CVM) and Multiple Linear Regression using SPSS version 27. Contingent Valuation Method (CVM) approach involves direct question and answer activities with respondents to find out the maximum value for their willingness to pay for green economy-based biopesticide products. According to Rasyda & Santosa (2023) The steps in CVM analysis are designing a hypothetical market, providing auction values, calculating the average WTP, creating an auction curve, and aggregating data.

a. Create a hypothetical market, where it is necessary to explain the surrounding environtments that has problems, and communicate with the community the improvements that will be made.
b. Providing auction value, where bids regarding the amount of WTP need to be conducted through interviews
c. Calculating the average WTP, where it is necessary to estimate the average WTP value to determine people's willingness to pay. This can be calculated using the formula below,

$$\bar{x} = \frac{\sum_{i=1}^{n} x1f1}{\sum_{i=1}^{n} f1}$$

Where, $\bar{x}$ is the average value, $x1$ is the WTP value for i, dan $f1$ is the relative frequency.

d. Create an auction curve, where it is necessary to relate the WTP value to the cumulative frequency of the number of respondents who are willing to pay.
e. Combining data, where the need to combine data involves converting sample average data and the overall population average which can be calculated using the formula below,

$$TWTP = EWTPi\ x\ N$$

Where, $TWTP$ is the total willingness to pay, $EWTPi$ is the average value WTP, and N is the population.

The multiple linear regression approach was carried out to test the relationship between factors that influence willingness to pay. The independent variables in this research are income, number of family members, special expenses, business capital, business profits, and quality of biopesticide products. Meanwhile, the dependent variable in the research is willingness to pay. Meanwhile, in multiple linear regression, the test results that can be carried out are hypothesis tests which include partial tests, simultaneous tests and determinant tests (Jumiati et al., 2023). Adapun rumus umum yang digunakan dalam regresi linear berganda yaitu,

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \cdots + \beta nXn + e$$

Where, $X1$ is the education, $X2$ is the family members, $X3$ is the agricultural land, $X4$ is the expenses of pesticide, $X5$ is the income, $X6$ is the venture capital, $X7$ is the

operating profit, and $X8$ is the quality of biopesticide. Variable $Y$is the willingness to pay.

4. Result and Discussion

4.1 Result

Contingent Valuation Method (CVM)

The data collection process was carried out for two months, namely August-September 2024. Then 30 respondents were obtained, the majority of whom worked as farmers. The results of the first research, using The Contingent Valuation Method (CVM) approach are described to measure the passive value of natural resources, which is essentially the purpose of this contingent valuation model to determine the willingness or desire to pay (Afifudin et al., 2022).

Formulate a hypothetical market, The outcome of a formulate hypothetical market, researchers provide respondents with an overview of environmental conditions and the impact of pollution on the use of chemical pesticides, as well as a comparison with biopesticides which are environmentally friendly organic pesticides. Researchers also asked questions about whether or not respondents needed to use biopesticides considering the many benefits they would get, as well as whether respondents were willing to pay more for biopesticide products that have a positive impact on the environment. The characteristics of respondents based on the biopesticide products that need to be used can be seen in Figure 1.

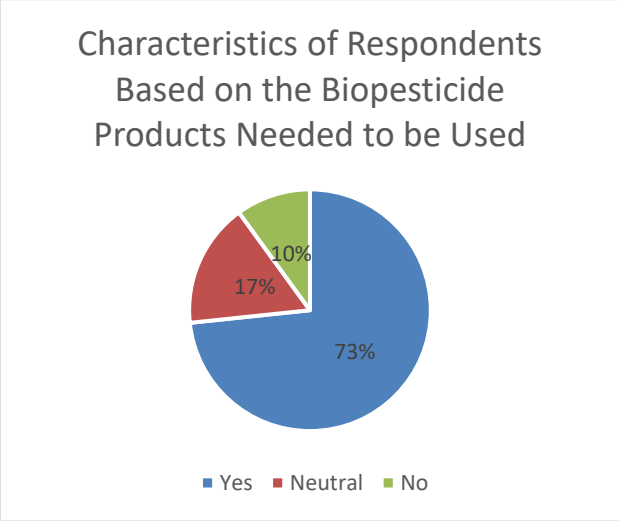

Figure 1. Characteristics of Respondents Based on the Biopesticide Products Needed to be Used
Source: Processed Data (2024)

From Figure 1, it can be seen that 73% of respondents feel the need to use biopesticide products in farming. Meanwhile, the remaining 17% felt neutral and 10% felt they did not need the product. This means that > 50% of respondents understand the importance of using biopesticide products in order to implement the green economy concept and minimize the resulting pollution residue, so there is a need for a

willingness to pay to support biopesticide products for use. The characteristics of respondents based on willingness to pay can be seen in Figure 2.

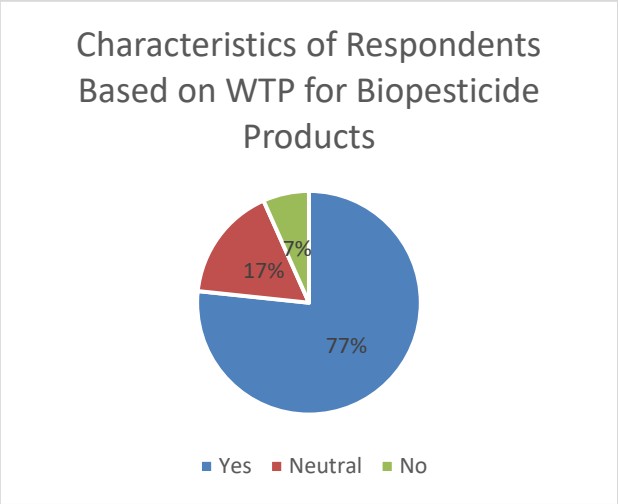

Figure 2. Characteristics of Respondents Based on Willingness to Pay
Source: Processed Data (2024)

From Figure 2 it can be explained that 77% of people agree to pay for biopesticide products, while the remaining 17% feel neutral and only 7% disagree, meaning that > 50% of respondents are willing to pay for green economy based biopesticide products that have a positive impact on the environment.

Provides Auction Value. The outcome of a auction values, researchers provide a bid allocation of willingness to pay values, while respondents choose the value they want. The value offered is the maximum additional value that the public is willing to pay for green economy-based biopesticide products that have good product quality. The characteristics of respondents are based on nominal WTP of Rp. 40,000, Rp. 30,000, Rp. 20,000 and are not willing to pay which can be seen as in Figure 3.

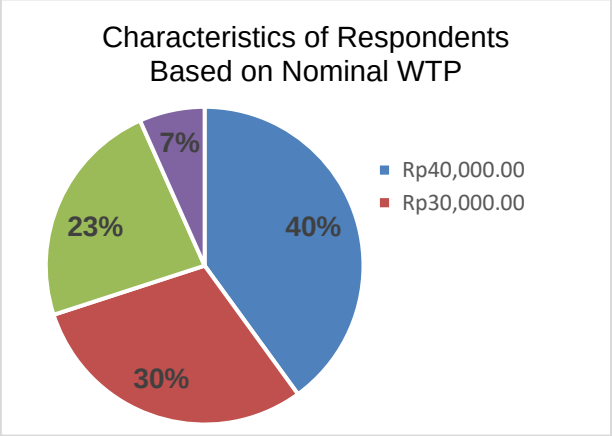

Figure 3. Characteristics of Respondents Based on Nominal WTP
Source: Processed Data (2024)

From Figure 3 above, it shows that 40% of people are willing to pay IDR 40,000, followed by IDR. 30,000 by 30%, at a value of Rp. 20,000 at 23% and are not willing to pay 7%. This explains that most people are willing to pay to get biopesticide products based on a green economy. According to (Rasyda & Santosa, 2023) that the reason

people are willing to pay is because the product meets people's needs, both in terms of the benefits obtained, nominal information that suits people's pockets, there are no dangerous residues, and the negative impact of environmental pollution is increasingly minimal.

Calculate the Average Willingness to Pay (WTP) Value, The outcome of a calculate the average WTP value, where in the estimated average WTP auction value of respondents for biopesticide products obtained from the auction value given by the respondent (Pujiastuti et al., 2023). The average WTP value can be calculated using the formula below,

$$\bar{x} = \frac{\sum_{i=1}^{n} x1f1}{\sum_{i=1}^{n} f1}$$

$$\bar{x} = \frac{x1.f1 + x2.f2 + x3.f3 + \cdots + xn.fn}{fi + f2 + f3 + \cdots + fn}$$

$$\bar{x} = \frac{40.000x12 + 30.000x9 + 20.000x7}{28}$$

$$\bar{x} = \frac{480.000 + 270.000 + 140.000}{28}$$

$$\bar{x} = 31.786 \sim 32.000$$

From the calculation of the average WTP, the average value of the additional nominal value that is willing to be paid for quality biopesticide products based on a green economy is IDR. 32,000.

Create an Auction Curve, The outcome of a create an auction curve, that the auction curve is used to relate the WTP value to the cumulative frequency value of the number of respondents who are willing to pay for quality biopesticide products based on a green economy. The auction curve can be seen in graphic Figure 4.

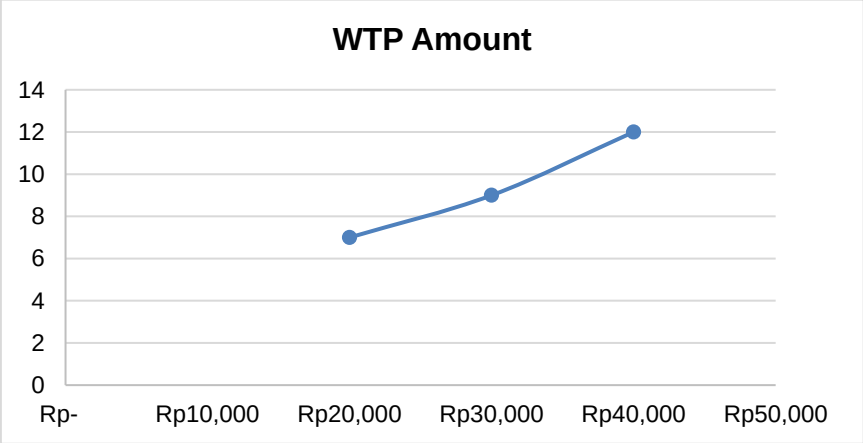

Figure 4. WTP Amount
Source: Processed Data (2024)

From Figure 4 above, it can be seen that the number of respondents who are willing to pay for quality and economic-based biopesticide products are 3 types, namely 7 people worth IDR 20,000, 7 people worth IDR. 30,000 big 9 people. And the value is Rp. 40,000 for 12 people. This shows that the majority of respondents understand the

importance of using biopesticide products to support their farming activities so as not to cause pollution around their land.

Aggregate data, The outcome of the final stage in the CVM approach is aggregating the data, where the process involves converting the sample mean data and the population mean as a whole (Yunus et al., 2019). The calculation of total willingness to pay is as follows,

$$TWTP = EWTPi\ x\ N$$
$$TWTP = 32.000\ x\ 30$$
$$TWTP = 960.000$$

From the total WTP calculation, the data obtained is IDR. 960,000 total WTP from 30 respondents.

Multiple Linear Regression

In multiple linear regression testing, researchers used the SPSS version 27 application for analysis. This linear multiple regression is used to test the influence of the independent variable on the dependent variable (Sholeh et al., 2022). The dependent variable in this research is Willingness To Pay (WTP) while the independent variables used are factors of willingness to pay. The factors that influence the partial willingness to pay for biopesticide products can be seen in Table 2.

Table 2. Partial Test Willingness to Pay

Variable	Coeffi cients	Std. Error	t	Sig	Information
Constant	1.297	0.798			
Education	-0.088	0.113	-0.783	0.442	Not Influential
Family Members	0.160	0.110	1.455	0.160	Not Influential
Agricultural Land	0.329	0.118	2.775	0.011	Influential
Expenses Of Pesticide	0.156	0.117	1.336	0.196	Not Influential
Income	-0.320	0.122	-2.634	0.016	Influential
Venture Capital	0.178	0.127	1.406	0.174	Not Influential
Operating Profit	0.033	0.097	0.345	0.733	Not Influential
Quality Of Biopesticide Products	0.260	0.109	2.377	0.027	Influential

Source: Processed Data (2024)

From table 2 above, it can be seen from the partial test results that the factors that influence willingness to pay partially and significantly are the Agricultural Land variable of 0.011, Income of 0.016, and Biopesticide Product Quality of 0.027. This is because the significance value is <0.05. Meanwhile, the variables that do not have a significant influence are Education of 0.442, Family Members of 0.160, Expenditures of 0.196, Business Capital of 0.174, and Business Profit of 0.733 because they have a significance value of > 0.05. This is in line with what was conveyed by Fitriyani (2021) that in the partial test, if the significance value is <0.05, the hypothesis is accepted, meaning it has a significant influence on the dependent variable, and vice versa, if the significance value is > 0.05, the hypothesis is rejected, meaning it does not have a significant influence on the dependent variable. From these measurements it can be explained that the willingness to pay by the people of Candiwatu, Pacet District is

largely due to considerations of agricultural land, income and the quality of biopesticide products.

Apart from partial tests, there are also simultaneous tests, where the dependent variable is influenced jointly by the factors that influence it as seen in Table 3.

Table 3. Simultan Test Willingness to Pay

Model	Sum Of Squares	df	F	Sig	Information
Regression	5.420	8	7.306	.000[b]	Influential

Simultaneous test results show that together the variables education, family members, agricultural land, expenses, income, business capital, business profits and product quality have a significant effect on the willingness to pay variable. This can be seen from the significance value of 0.000, so the hypothesis is accepted because the significance value is <0.05. As stated by Pratiwi et al. (2023) that if the value is (P>0.05) then Ha is accepted and Ho is rejected, meaning that the independent variable has a large influence on the dependent variable and vice versa.

The measurements carried out in the determination test are carried out to measure how much influence the independent variable has on the dependent variable which can be seen in table 4.

Table 4. Determination Test Willingness To Pay

Model	R	R Square	Adjusted R Square
1	.858[a]	0.736	0.635

From the data in table 4 above, it can be seen that the R square value is 0.736, meaning that the relationship between the independent variables has an effect on the dependent variable by 73.6%. Meanwhile, the remaining 26.4% is influenced by other variables such as price, promotions and ability to pay.

4.2 Discussion

Contingent Valuation Method (CVM)

In using the Contingent Valuation Method (CVM) in several stages starting with creating a hypothetical market, where the majority of people in the sample need to use biopesticide products, and the majority of people are willing to pay for the availability of green economy-based products. biopesticide products, this is because people are aware of the importance of organic fertilizer in agricultural activities to minimize pollution. As expressed by Latumahina et al. (2020) that it is important to use biopesticide products because biopesticides have an important role in supporting agricultural sustainability and environmental health. Apart from that, biopesticides are also environmentally friendly, can reduce human health risks, reduce pest resistance, maintain biodiversity, and have long-term economic efficiency. So biopesticide products can be a solution for travel and food safety.

At the stage of providing auction value, it can be seen that the majority of people are willing to pay an additional IDR for biopesticide products. 30,000 to Rp. 40,000. At

the calculation stage, the average WTP value obtained was IDR. 32,000. And at the stage of making the auction curve, the results of the two previous stages are drawn in the form of a curve about people who are willing to pay. At the aggregate data stage, the total number of people willing to pay Rp. 960,000 for 30 respondents. The reason people are willing to pay is because of the superiority of environmentally friendly products as stated by Manan et al. (2018) that people are willing to pay because people are aware of the health risks caused by chemical residues in agricultural products, it is environmentally friendly, maintains soil fertility, and can reduce environmental improvement costs.

Multiple Linear Regression

In the discussion of partial test results that the factors that influence willingness to pay partially and significantly are the Agricultural Land, Income, and Biopesticide Product Quality. The people of Candiwatu tend to pay close attention to agricultural land planted with food crops, annual crops, fruit horticultural crops and vegetable horticultural crops. Ownership of agricultural land in Candiwatu Village is mostly owned by themselves, because most of the people work as farmers. So people tend to try the best for their agricultural businesses, because if agricultural land is managed well it will produce quality agricultural products. Therefore, support in the willingness to pay for biopesticide products to produce agricultural products that are environmentally friendly and based on a green economy, so that pollution on agricultural land can be minimized. As stated by Rachmah et al. (2020) that agricultural land variables have a positive influence on willingness to pay, so that the security of agricultural land needs to be maintained so that it is not polluted, because if people use green economy-based fertilizers, the fertility of the soil will increase as indicated by its texture becoming looser because it is not polluted.

The income variable has a significant influence on willingness to pay. The income earned by the Candiwatu community comes from farming. Apart from that, 80% of the 30 respondents admitted that they had other jobs outside of farming, and admitted that the income they earned from other jobs was greater than farming. Therefore, it can be seen that the higher people's income, the higher their purchasing power, so that it can support the achievement of willingness to pay for green economy-based biopesticide products. In line with the explanation Medida & Purnomo (2021) that people's purchasing power for the products or services offered describes how much the people and their families are willing to pay for the products they want and need.

The biopesticide product quality variable also has a significant influence on willingness to pay. Several dimensions of product quality used are performance, noise, features, suitability and durability. Attributes in the quality of biopesticide products are considered to represent willingness to pay. From the results of interviews with respondents, it was stated that product quality could be a consideration for respondents in purchasing useful products. Of the 30 respondents, only 8 accepted that product quality could be a reference for someone in making purchasing decisions. If the quality of green economy-based biopesticide products is good, it can increase the level of public confidence in purchasing them and vice versa. According to Setung

& Rato (2021) that the quality of the product can meet people's expectations, thereby encouraging people to buy the products offered. Therefore, improving product quality will further increase the willingness to pay.

From the results of simultaneous test measurements, it is hoped that there will be factors that influence willingness to pay to pay attention to. Starting from education, where the higher the level of education, the higher the understanding of biopesticide products will increase, so there is a need to explain to the public about the importance of education, where if the level of education is higher, the public's knowledge can increase, so that the willingness to pay for biopesticide products will increase. In line with what was said by Pujiastuti et al. (2023) that if the number of highly educated people increases, the level of people's willingness to pay will increase.

The family member variable simultaneously has an influence on the willingness to pay variable, where if the number of members increases, then the expenditure costs will also increase, and vice versa, if the number of family members is small, then the expenditure costs will also decrease, so that it can increase the willingness to pay in public. This can be appealed to the people of Candiwatu so that they can plan their family size well and according to their abilities. As stated by Ulfa et al. (2023) that if the respondent's family size increases or decreases it will affect the costs of expenditure, thus also affecting the willingness to pay.

The agricultural land variable, both simultaneously and partially, has an influence on the willingness to pay, in fact the largest value is predominantly the agricultural land variable, so it is necessary to encourage the people of Candiwatu to be productive in farming. To increase good agricultural production, it is necessary to support agricultural land that is also good and not polluted by pesticide residues, so that the use of biopesticides can be done to reduce the danger of pollution. In line with what was said by Rachmah et al. (2020) that agricultural land has a positive influence on people's availability to pay for organic pesticides.

The special expense variable only has a simultaneous influence on willingness to pay. The costs incurred by the Candiwatu community regarding pesticides so far are IDR. 60,000 – Rp. 70,000. A community's needs regarding pests can influence as much as its financial spending. The more finances a community has, the more expenses it will have, so that certain expenses can influence the willingness to pay for green economy-based biopesticide products. As stated by Saraswati et al.(2023) that people who have used a product will not mind paying more for a product with better quality.

The income variable, both simultaneously and partially, has a significant influence on willingness to pay. The income received by the Candiwatu village community is not limited to income from farming, because some have other professions as government employees, teachers, private employees, or entrepreneurs, so that having multiple jobs means that the community also has a high income. People who have high incomes tend to want good farming concepts, including the provision of quality biopesticide fertilizers. Senate with a statement Pujiastuti et al. (2023) that people who have a high

income will better fulfill their family's needs, so that they can support the community in carrying out their willingness to pay.

The business capital variable only has a simultaneous influence on willingness to pay. From the questionnaire given to the public, 23 people out of 30 respondents stated that they used capital of > Rp. 50,000,000, meaning that many people are willing to spend a lot of capital for the success of their farming business. Erfrissadona et al. (2020) also explained that the higher the capital, the higher the expenditure costs. People who have finances and are willing to support their farming business will be willing to pay more to get green economy-based biopesticide products to improve the quality of people's agricultural products. The business profit variable also has a significant influence on willingness to pay. In this case, of the 30 respondents, 24 of them admitted to getting profits from farming, while the other 6 people did not. This shows that farming has profitable business opportunities because the higher the business profits obtained by farmers can increase their willingness to pay for the Biopesticide products offered.

The quality of Biopesticide products has a significant influence on willingness to pay both partially and simultaneously. The quality of Biopesticide products is considered to represent people's willingness to pay, meaning that the better the quality of Biopesticide products, the more willing people are to pay for the product. Aufanada et al. (2017) adding that people are willing to pay more to get Biopesticide products because good product quality provides high benefits. Assessment of product quality is related to the insight of each individual, so that people have different perceptions and assessments, so that the products offered are required to have good quality so that people are willing to pay for green economy-based Biopesticide products.

In the determinant test, it can be seen that the influence of the independent variable on the dependent variable is very large. As stated by Ashar et al.(2023) that the size of the price variable and the ability to pay has a strong influence on the willingness to pay, namely 67.7%, meaning that more than 50% of these variables are important for people to be willing to pay for green economy-based Biopesticide products. Therefore, in further research in Candiwatu Village, it can be recommended to use price, promotion and ability to pay variables.

5. Conclusions

The conclusion of this research is that the people of Candiwatu Village are willing to pay for green economy-based Biopesticide products with an additional amount of Rp. 32,000 per product. In the multiple linear regression test, there are three variables out of eight independent variables that have a partial influence on the dependent variable such as agricultural land, income and quality of Biopesticide products. Meanwhile, in the simultaneous test, all variables have a significant influence on willingness to pay. In the determination test, it can be seen that 73.6% of the independent variables have an influence on the willingness to pay. So that the results of this research can be used as a reference and for decision making regarding determining the nominal price of biopesticide products based on green economy.

Suggestions that can be given from the results of this research are to the public not to use chemical fertilizers to reduce the impact of pollution, and to realize the willingness to pay for quality biopesticide products that are environmentally friendly. Suggestions for further research are designing biopesticide products to help society minimize pollution

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