The Effect of The Determination of Plant Quarantine Installations and Inline Inspections On The Acceleration of Agricultural Commodity Exports In The Working Area of The Surabaya Agricultural Quarantine Center

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ABSTRACT

Keywords: Export Acceleration, Agricultural Quarantine, agricultural regulation

This research aims to determine the impact of establishing plant quarantine facilities and inline inspection on export acceleration at the Surabaya Plant Quarantine Center. The study employs a quantitative approach and collects data from agricultural export companies operating in regions that implement plant quarantine measures and inline inspection. The analysis method used in this research is the Kruskal-Wallis test to evaluate the relationship between the establishment of plant quarantine facilities and inline inspection and export acceleration. The results of the analysis indicate a significant influence of establishing plant quarantine facilities and inline inspection on export acceleration. Export companies registered with effective Plant Quarantine Facilities and inline inspection demonstrate an improvement in their ability to meet plant quarantine requirements and enhance efficiency in inline inspections. This positively impacts the export process, including reducing delays and increasing the confidence of international trading partners. This research provides a better understanding of the role of plant quarantine facilities and inline inspection in driving ean xport acceleration in the agricultural sector. The practical implications of this study emphasize the importance of enhancing plant quarantine infrastructure and implementing effective inline inspection systems to promote agricultural export growth. Moving forward, efforts should be made to improve coordination among relevant agencies in the implementation and supervision of plant quarantine and inline inspection regulations to achieve optimal outcomes in enhancing the export performance of the agricultural sector.

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Introduction

Export activities are one of the main activities in international trade and encourage a country to be more open to World Trade Organization (WTO) regulations. Each country measures its national trade performance from export performance (Anita & Hidayat, 2020). According to the Financial Services Authority (OJK), a surplus trade balance is the difference in the value of exports higher than the value of a country's imports in a certain period of time. Based on data from the Central Statistics Agency, during 2022 the cumulative export value of Indonesia increased by 26.07 percent, reaching US$ 291.98 billion compared to the same period in 2021. This shows that export performance is growing well and supports Indonesia's economic growth achievement target in 2022 (Irawan & Ningsih, 2020).

Indonesia is a country with high biodiversity, this makes capital for the country to develop development in agriculture with superior commodities as a fulfillment of domestic needs and for export commodities (Figueiredo, 2016). Facing the global market and realizing the competitiveness of agricultural products in the international market, the Ministry of Agriculture is played by the Agricultural Quarantine Agency and delegated to the technical implementation unit related to the provision of sustainable agricultural resources to ensure food security (Oktaviani, 2016). The implementation of these functions is carried out through import and export supervision and certification activities, verification and audit of conformity of technical requirements, as well as determination of areas/areas and quarantine certification between areas (Yanti, 2010).

According to Minister of Agriculture Number 1 of 2017, Inline inspection is a plant quarantine action on agricultural commodities carried out by Plant Quarantine Officers during the production process or part of the production process in the context of issuing a Phytosanitary Certificate. Inspections are carried out on all sectors of agricultural products to be exported from upstream to downstream on a regular basis (Tokarick, 2014).

Export is one of the mechanisms to improve the welfare of farmers in addition to increasing the country's foreign exchange. Export is the purchase of other countries for goods made by companies in the country (Benny, 2013). Agricultural export commodities are plants, plant products, plant parts, and other commodities that are superior results for export. The Ministry of Agriculture targets improving the welfare of farmers through three strategic programs. The three programs are the provision of People's Business Credit (KUR) services, the Triple Export Movement (Gratieks) program and the establishment of the Agricultural Development Strategy Command (KostraTani).

The previous research was conducted by (Irawan & Ningsih, 2020), conducting research aimed at determining the role of agricultural quarantine in the export acceleration process in increasing the productivity of the agricultural sector of Lampung Province for the 2017-2019 period. The difference between previous research and the research being conducted lies in one of the variables used differently due to differences in location (Wang et al., 2022).

This research carries a quantitative paradigm with the aim of explanatory using hypothesis testing. The researcher aims to explain the variable relationship, namely the influence of Plant Quarantine Installation Determination and Inline Inspection on the acceleration of agricultural commodity exports at the Surabaya Agricultural Quarantine Center (Ihsanullah & Rashid, 2017). The purpose of this study involves an analysis of the effect of Plant Quarantine Installation Determination and the Application of Inline Inspection on accelerating exports of agricultural commodities (Liu, Zhang, Li, & Zhao, 2023).

This research is basic research and useful to find the effect of the Determination of Plant Quarantine Installations and Inline Inspection on increasing the acceleration of agricultural commodity exports, which is the main program of the Ministry of Agriculture (Martin, Constable, & Tzanetakis, 2016). The benefits of this research are divided into two aspects, namely theoretically and practically.

Theoretically, it is expected that this research can increase knowledge about the efficiency and speed of the export process, optimize agricultural quarantine supervision, and improve compliance with agricultural quarantine regulations (Ramadhan, 2019).

Research Methods

Types of Research

The type of research used in this study to test hypotheses and conduct data analysis is to use quantitative research with a positivism approach because research questions are formulated in the form of hypotheses that contain conjectures about the influence between one variable and another (Cooper & Schindler, 2014).

Data Types and Sources

This research uses secondary data, secondary data, namely service transaction data taken from the IQFast application during 2022. IQFast application is an application with Big Data that is centralized for all services carried out by the Surabaya Agricultural Quarantine Center. The variable benchmark for IKT and Inline inspection determination is the number of certification frequencies and export values (Ghozali, 2016).

Population and Research Sample

The type of probability sampling used is purposive judgemental sampling. This method was chosen because the researcher determines the selected sample based on the personal judgment of the researcher. Thus, the sample selection process is based on the consideration and wisdom of the researcher in determining the elements that are considered most relevant and representative for the study (Zikmund & Stanton, 2017).

Data Collection Methods

In this study, secondary data collection was carried out with the following steps. First, the researcher took a list of company names registered in the determination of Plant Quarantine Installation (IKT) and Inline Inspection issued by the SAP BBKP Surabaya section. Second, elimination of companies that do not meet the criteria that have been set to be part of the determination of IKT and Inline Inspection. This step aims to determine the number of samples to be used in the study. Finally, export data and the number of export certification frequencies of companies registered in the IKT and Inline Inspection determination in 2022 are filtered to obtain data relevant to the research focus. With this method, it is expected that the secondary data collected can provide accurate information and in accordance with the research objectives regarding the effect of IKT and Inline Inspection on the acceleration of agricultural commodity exports.

Data Analysis Techniques

First, a data normality test was carried out using the Kolmogorov-Smirnov test. The basic concept of this test is to compare the distribution of data to be tested for normality with the standard normal distribution, which is the distribution of data that has been transformed into a Z-Score and assumed to be normally distributed.

Furthermore, in statistical analysis, there are two concepts of analytical procedures, namely parametric and non-parametric. If the assumptions of normality and homogeneity of variance are not met, non-parametric analyses such as the Kruskal-Wallis test can be used as an alternative to the one-way ANOVA test.

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Finally, the Mann-Whitney test is used as a non-parametric test to compare two independent variables from ordinal data or interval data that are not normally distributed.

Results and Discussion
Descriptive Analysis

Descriptive statistics are used to obtain a picture of the sample to be studied. The variables used to obtain a sample picture in this study are companies registered in the Determination of Plant Quarantine Installation and In line Inspection. The number of companies registered in the Plant Quarantine Installation Determination alone is 30 companies and the number of companies registered in Inline Inspection alone is 65 companies. Further explanation on the number of companies that became the research sample is as follows:

Table 1 List of Companies listed on IKT

NO	COMPANY		
1	PT. AGRI PROSPER PERTIWI	16	PT. SYNGENTA SEED INDONESIA
2	PT. ORIGIN JAYA (1)	17	PT. Asia Prima Konjac
3	PT. ORIGIN JAYA (2)	18	PT. Ambico
4	PT. BATARA ELOK SEMESTA TERPADU	19	CV. Jia Li
5	PT. BENTOEL PRIMA (1)	20	PT. Marefa Alam Samudra
6	PT. BENTOEL PRIMA (2)	21	PT. Bangshang Technology Ja
7	PT. BISI INTERNATIONAL (1)	22	PT. Algalindo Perdana
8	PT. BISI INTERNATIONAL (2)	23	PT. RAJAWALI PENTA NUSANTARA
9	PT. CORTEVA AGRISCIENCE SEEDS INDONESIA (Dupont)	24	PT. PROBOLINGGO BIG POWER
10	PT. FUGUI FLOUR &; GRAIN INDONESIA	25	CV. KHARISMA NUSANTARA
11	PT. HARVESTAR FLOUR MILLS	26	PT. PRIMA AGUNG SEJAHTERA
12	PT. MALINDO FEEDMILL TBK	27	PT. WILMAR NABATI INDONESIA
13	PT. MITRA TANI DUA TUJUH	28	PT. PATRIOTS SAKTI INDONESIA
14	PT. SADHANA	29	PT. TANA NATA ASIA
15	PT. SELECTANI OF THE PARENT COMPANY	30	PT. THE GIFT OF PRIMARY FORTUNE

The table above illustrates that the number of companies listed in the IKT is 30 companies. While the following is a table that illustrates the list of companies listed on the In line inspection, which is a total of 69 companies.

Table 2 List of Companies listed on In line inspection

No	COMPANY NAME	No	COMPANY NAME
1	CV. Cipta Jaya Sentosa	36	PT. Integra Indocabinet
2	CV. Fertilindo Agrolestari	37	PT. Intera Indonesia
3	CV. Hortindo Agro Kencana Farm	38	PT. Interkraft
4	CV. Jati Makmur	39	PT. Main Intertrends
5	CV. Jati Makmur	40	PT. Inti Mas Abadi
6	CV. Megatek Karya Unggul	41	PT. East Java Main Center
7	CV. Mustika Karyajaya Sakti	42	PT. East Java Main Center
8	CV. Sengon Maju Lancar	43	PT. Jebe Koko
9	CV. Wana Indo Raya	44	PT. Kali Jaya Putra
10	PT. Agri Culture	45	PT. Beautiful Works of Alam Sejahtera
11	PT. Agri Makmur Pertiwi	46	PT. Sutarindo's work
12	PT. Aneka Coffee Industry	47	PT. Kayan Wood Industries
13	PT. Various Jungle of Indonusa	48	PT. Kutai Timber Indonesia
14	PT. Origin of Jaya	49	PT. Manunggal Indowood Investindo
15	PT. Origin of Jaya	50	PT. Megasurya Mas
16	PT. Batara Elok Semesta Terpadu	51	PT. Mitratani Dua Tujuh
17	PT. Baujeng Plywood Bernas	52	PT. Mustika Bahana Jaya
18	PT. Bisi International Tbk	53	PT. Mustika Buana Sejahtera
19	PT. Boss Image Nusantara	54	PT. Rimba Sempana Indonesia
20	PT. Cahya Nusantara Lestari	55	PT. Sakari Eternal Source
21	PT. Cargill New Zealand	56	PT. Salim Ivomas Pratama Tbk
22	PT. Sandalwood Putra Nusantara	57	PT. Manunggal
23	PT. Citra Nutrindo Langgeng	58	PT. Sari Mas Permai
24	PT. Eka Timur Raya	59	PT. Sekar Laut, Tbk
25	PT. Fruit In Indonesia	60	PT. Mighty Zinc Fong Moulding
26	PT. Galangcitramitra Majumapan	61	PT. Starindo Anugerah Abadi
27	PT. Gemilang Jaya Makmur Abadi	62	PT. Source: Graha Sejahtera
28	PT. Golden Union Oil	63	PT. Sumber Mas Indah Plywood
29	PT. Green Mountains Natural Foods	64	PT. Tunas Baru Lampung
30	PT. Gresik Prima Utama	65	PT. Loka Business
31	PT. Hakiki Donarta	66	PT. Loka Business
32	PT. Fragrant Sustainable Wood	67	PT. Wana Cahaya Nugraha
33	PT. Indo Furnitama Kingdom	68	PT. Wilmar Nabati Indonesia
34	PT. Indoharvest Spice	69	PT. Yongbee New Zealand
35	PT. Indonusa Algaemas Prima		

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Hypothesis Testing

In this study, before the instrument test is carried out, it is necessary to test the variables that will be used next. A classical assumption test is a set of statistical tests used to examine the basic assumptions that must be met in regression analysis.

Normality Test

The Kolmogorov-Smirnov normality test is a statistical method used to test whether a sample of data comes from a normal distribution. This test is based on a comparison between the empirical distribution (observed data) and the expected theoretical distribution (normal distribution). The p-value indicates the extent to which the data is normally distributed. If the p-value is greater than the established significance level (usually 0.05), then the null hypothesis is acceptable and it can be concluded that the data are normally distributed. If the p value is less than the significance level, then the null hypothesis is rejected and it can be concluded that the data are not normally distributed.

Table 3 Kolmogorov-Smirnov Test Results

		Kolmogorov-Smirnova			Shapiro-Wilk		
	Method	Statistics	Df	Sig.	Statistics	Df	Sig.
Freq	Regular	.418	567	0.000	.177	567	0.000
	ILI	.294	64	0.000	.602	64	0.000
	IKT	.338	25	0.000	.466	25	0.000
	a. Lilliefors Significance Correction						

Source: SPSS data processing results

Based on the table above, the significance value of p (Asymp. Sig.) is 0 while the significance value of p (Asymp. Sig) is 0.05 so it can be concluded that the residual of the regression estimate is not normally distributed because it is smaller than 0.05. Because the data is not normally distributed, subsequent analyses cannot use regression analysis but use the Kruskal Wallis test.

Kruskal Wallis Test Results

The Kruskal-Wallis test is a nonparametric statistical method used to compare the averages of three or more groups derived from a population that is not normally distributed. This test is often used as an alternative to the variance analysis test (ANOVA) which is used for data that does not meet normality assumptions. The resulting statistical test is H (also known as generalized chi-square value) which has a chi-square distribution with a certain degree of freedom. The p-value indicates the extent to which there are significant differences between the groups. If the p-value is smaller than the established significance level (usually 0.05), then there is a significant difference between at least the two groups.

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Table. 4 Wallis Kruskal Test Results

	Method	N	Mean Rank
	Ranks		
Freq	Regular	567	300.34
	ILI	64	560.08
	IKT	25	374.38
	Total	656	

Table 5 Chi-square distribution table

Test Statisticsa,b	Freq
Chi-Square	112.911
Df	2
Asymp. Sig.	0.000
a. Kruskal Wallis Test	
b. Grouping Variable: Method	

In the table, you can see the independent variable of setting the Agricultural Quarantine Installation (IKT) as X1 and in line inspection as X2. While regular is a method other than IKT and Inline inspection which is the dependent variable (Y). The results of the Kruskal Wallis test in table 4.4 show that the mean rank value of each independent variable is the determination of Agricultural Quarantine Installation (X1) 374.38 and inline Inspection (X2) 560.08. While the value of the dependent variable with the regular method obtained a value of 300.34. It can be seen that the mean rank value of the independent variable is greater than the value of the dependent variable which indicates that it is significantly different. Then among the three independent variables and dependent variables, Inline inspection has the highest value.

If you look at the test results based on probability > significance level ($\alpha = 0.05$), then Ho is accepted. Conversely, if the probability < the level of significance ($\alpha = 0.05$), then Ho is rejected.

From the output table it can be seen that the value of asymp. Sig/asymptotic significance is 0.000, or probability below 0.05 (0.000 < 0.05), so Ho is rejected. Because the decision to produce H0 was rejected, it can be concluded that with a significance figure of 5% there is a real difference (significant) between the two quarantine treatment methods, namely the determination of the Agricultural Quarantine Installation and Inline inspection of export acceleration.

The results of the analysis above show that there is a significant difference between the determination of plant quarantine installations with export acceleration and inline inspection with export acceleration. With the highest inline inspection mean rank value, it can also be concluded that Inline inspection is most significantly different from IKT.

Table 6 Mann-Whitney Test Results of IKT Variables with Regular

	Method	N	Mean Rank	Sum of Ranks
	Ranks			
Freq	Regular	567	293.75	166555.00
	IKT	25	358.92	8973.00
	Total	592		

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Test Statisticsa	
	Freq
Mann-Whitney U	5527.000
Wilcoxon W	166555.000
Z	-1.902
Asymp. Sig. (2-tailed)	0.057
a. Grouping Variable: Method	

The Mann Whitney U Test is a non-parametric test used to determine the median difference of 2 independent groups if the dependent variable data scale is ordinal or interval / ratio but not normally distributed. The Mann Whitney U Test not only tests the Median difference, it also tests the Mean. The basis for taking putsan in the Mann Whitney test is:

1. If the value is Significance or Asymp. Sig (2-tailed) is smaller than a probability of 0.05 then the hypothesis or H1 is termed
2. However, if the significance value or Asymp. Sig (2-tailed) is greater than a probability of 0.05 then the hypothesis or H1 is rejected.

Based on the output of the "statistical test" in the mann whitney test above, the Asymp value is known. Sig (2-tailed) of 0.00 is less than the probability value of 0.05. Therefore, it can be concluded that H1 is accepted, in other words, IKT is not significantly different from companies that do not use IKT or through regular channels.

Table 7 Mann-Whitney Variable Inline Inspection (ILI) Test Results with Regular

Ranks	Method	N	Mean Rank	Sum of Ranks
Freq	Regular	567	290.59	164764.50
	ILI	64	541.12	34631.50
	Total	631		

Test Statistics	
	Freq
Mann-Whitney U	3736.500
Wilcoxon W	164764.500
Z	-10.582
Asymp. Sig. (2-tailed)	0.000
a. Grouping Variable: Method	

Based on the output of "test statistics" in the mann whitney test above, it is known that the middle value of the export frequency of companies using Inline inspection is significantly different from companies using the regular method (Asymp. Sig. < 0.05). In other words, companies listed on inline inspection are better than regular lines in terms of export acceleration.

The Effect of Plant Quarantine Installation Determination on Export Acceleration Based on the Kruskal Wallis test, it was found that the bottom had an effect on export acceleration. The establishment of Plant Quarantine Installations is one of the efforts taken by the Agricultural Quarantine Agency to accelerate the pace of exports by

accelerating services, cutting several stages of the export service process that should be carried out agricultural quarantine checks every time an export service is submitted by a service user or exporter.

The Effect of Inline Inspection on Export Acceleration In the Kruskal Wallis and Man Whitney tests carried out, it can be concluded that inline inspection has had an effect on export acceleration and is better than the method of determining plant quarantine installations.

Conclusion

The conclusion of the results showed that the Determination of Plant Quarantine Installations and In line Inspection had a positive influence on export acceleration at the Surabaya Agricultural Quarantine Center. The first and second hypotheses, which test the influence of individual policies, are accepted. The implications of this study theoretically include the ability of quarantine policies to control the risk of spreading Plant Disturbing Organisms (OPT), increase destination countries' confidence in the quality of export products, and accelerate the export approval process through Inline Inspection. In practical terms, the results of the study can help the Surabaya Agricultural Quarantine Center to evaluate the effectiveness of quarantine policies and encourage improvements in plant quarantine infrastructure and inline inspection systems. The existence of limitations, such as a short duration of research (1 year) and a focus on company frequency data, suggest further research to expand the research period and involve more comprehensive data to gain a deeper understanding of export services.

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