International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Determinants Of Nutmeg Export Demand In Indonesia:The Role Of Price, Per Capita Income, And Population

Rinny Lontoh [1)] Anggreni Madik Linda [2)]

[1)] Agribusiness Study Program, Faculty of Science and Technology, Prisma University Manado, 93126, Indonesia
[2)] Agribusiness Study Program, Faculty of Science and Technology, Christian University of Wira Wacana Sumba, Sumba, Indonesia

Abstract

This study uses regression analysis to examine the relationship between price, demand, per capita income, and population in the nutmeg export market in Indonesia. The results showed that nutmeg price did not significantly affect demand, with a coefficient of 0.071 (β = 0.07, *p* = 0.5719), indicating that nutmeg demand is inelastic to price changes. In contrast, per capita income significantly affected increasing demand, with a coefficient of 0.000847 (β = 0.85, *p* < 0.0001). This finding indicates that increasing income drives nutmeg demand. On the other hand, population showed a negative effect on demand, with a coefficient of -0.00039 (β = -0.39, *p* = 0.0078), indicating a shift in consumption preferences in urban communities, especially among the younger generation who prefer modern and practical products. These findings provide important implications for farmers, business actors, and policymakers. Policies that focus on price stabilisation will not be effective in increasing demand. Instead, strategies should be directed at improving products' quality and added value through quality certification, product innovation, and more vigorous promotion in the international market. Increasing per capita income in export destination countries indicates the need for policies that support market access by reducing tariff barriers and diversifying nutmeg derivative products. On the other hand, innovation of more practical and ready-to-eat nutmeg products and the promotion of nutmeg's health benefits must be encouraged to overcome the decline in demand in urban communities. This study provides strategic insights into the development of Indonesia's nutmeg agriculture and trade sectors, especially in formulating policies that support sustainability and competitiveness in the global market.

Keywords: Nutmeg Price, Export Demand, Per Capita Income, Population

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

INTRODUCTION

The nutmeg export market in Indonesia is one of the critical sectors in the national economy, considering that nutmeg is a superior commodity with high demand in the international market (Asrol & Heriyanto, 2017). One of the world's leading producers of nutmeg is Indonesia, so it has the potential to develop this sector further (Ditjenbun, 2023). However, fluctuating price and demand dynamics often challenge farmers and business actors to achieve optimal profits (Alta et al., 2023). Therefore, a deep understanding of the relationship between price, demand, per capita income, and population is needed to formulate an effective strategy for developing the nutmeg export market.

The Price factor is one of the key elements influencing demand in the export market (Iswanti & Dhea Permata Sari, 2023). When the price of nutmeg increases, demand from abroad tends to decrease, while on the other hand, low prices can increase demand (Orchida Indahwaty T et al., 2023). This shows a complex relationship between price and demand, influenced by various global and local economic factors (*Finance,"* nd). By analysing this relationship, this study aims to provide a clearer picture of how nutmeg prices interact with demand from the export market.

Per capita income also contributes to the demand patterns of certain commodities, including nutmeg (Komarek et al., 2021). People with higher incomes tend to be able to purchase quality products, including spices (Rafika et al., 2023). This knowledge is essential for producers in determining marketing strategies and product development based on market needs.

The population in the destination country of export also plays a role in determining the demand for nutmeg; the more significant the population, the higher the potential demand for the commodity (Tirto. id, 2023). However, demographic factors and consumer behaviour that influence consumption patterns must also be considered. This study will provide insight into the most promising market segments for Indonesian nutmeg exports by analysing population data and demographic characteristics in the destination country.

In the research of Purba, D., & Widiastuti, T. (2021) entitled Analysis of Price Fluctuations and Export Demand for Spice Commodities in the International Market". This article discusses how the prices of spice commodities, including nutmeg, are affected by global demand and other macroeconomic factors. They conclude that price fluctuations can significantly negatively impact export volumes. Liu, X., & He, Q. (2020) entitled Global Trade Dynamics of Agricultural Commodities: Price and Income Elasticity of Demand This study provides a broader view of price and income elasticity in the demand for agricultural

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

commodities in the global market. This study emphasises that demand response to price and income changes varies greatly between importing countries.

Sudrajat, A., and Hamid, A. (2019), in a study entitled Strategy for Increasing the Competitiveness of Spice Exports in the Era of Globalization, emphasise the importance of price management strategies and improving product quality to increase competitiveness in the global market. The article highlights that the spice market, such as nutmeg, is very competitive, and price factors play a crucial role.

This study aims to identify and analyse the relationship between nutmeg prices, demand, per capita income, and population in the nutmeg export market in Indonesia and analyse the factors that influence nutmeg demand in the international market, including the impact of price fluctuations and per capita income and population.

The results of this study are expected to contribute to formulating better economic policies to support the development of the agricultural sector, especially in nutmeg commodities. The right policies can help improve the competitiveness of Indonesian products in the international market. By understanding the relationship between these factors, this study can help farmers and business actors optimise marketing and production strategies, which can increase income and welfare.

In this study, a specific hypothesis test is used to determine the existence of a significant relationship and the absence of a significant relationship between price, demand, and per capita income in Indonesian nutmeg commodities. This study will test these relationships through relevant data analysis methods, such as simultaneous equation regression, to evaluate the effect of each variable on nutmeg export demand.

MATERIALS AND METHOD

Research Data

This study was conducted from December 2025 to April 2026, using 30 (thirty) years of time series data. The research method used in this study is a descriptive quantitative method to explain the phenomena related to the factors influencing nutmeg demand.

Comparative analysis can be done using tables and graphs. Simultaneous Equation Regression Analysis This method is used to analyse the relationship between variables, and this study uses the SAS statistical program version 9.4. The data used are secondary data collected from various sources, including the Food Agriculture Organization (FAO), UN Comtrade, the Indonesian Central Statistics Agency, and the Ministry of Agriculture in time series data from 1993-2023. Secondary data used in this

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

study include data on nutmeg-producing countries, namely Indonesia, in the form of time series data, including data on Indonesian nutmeg demand, nutmeg prices, per capita income, and the population of Indonesia. The data in this study will be analysed through several stages, namely by analysing the influencing factors and evaluating the model to determine the relationship between variables.

Analysis of influencing factors

This analysis was conducted to identify factors that influence the demand for nutmeg, which is essential to obtain more information in this study. The method used is simultaneous equation regression analysis. The variables used are based on empirical results, experience, and theories on factors influencing demand. The equation obtained is presented in Equation 1, and the data is presented in table form, namely Table 1:

Table 1. Data on nutmeg demand, nutmeg price, per capita income, population

YEAR	QDPL (Request Nutmeg) (TON)	PKPL (Price Nutmeg) (IDR)	YPC (Income per capita) (IDR)	POP (Amount Resident)
1995	16450	20105	5509001	188600000
1996	20388	22069	5910946	191700000
1997	18692	23558	5572675	194900000
1998	18592	25008	5982474	194754808
1999	18120	26718	6422409	201400000
2000	18741	28606	3200000	204600000
2001	17967	30595	4810000	207900000
2002	12482	34082	5420000	211000000
2003	19509	35028	8311312	205132458
2004	21075	39420	8712067	217100000
2005	22578	43331	9132145	220100000
2006	21679	45568	9572480	223100000
2007	10101	48518	10641730	225900000
2008	7993	56803	12675500	231800000
2009	8719	60552	15028500	234900000
2010	9085	64538	17545400	237900000

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

2011	11206	71143	21678500	241000000
2012	15650	73123	23880866	231400000
2013	15365	78210	27028696	237641326
2014	21695	81171	30795098	247100000
2015	24687	84658	33748259	250200000
2016	27462	91196	38370000	253300000
2017	31910	98819	41900000	256200000
2018	32868	102132	45120000	259100000
2019	32472	105221	47960000	261900000
2020	32020	109016	51890000	264500000
2021	42997	112429	55990000	267100000
2022	42870	115485	59007000	269600000
2023	36256	117318	56000000	270203900
2024	39623	119516	62330000	272682500
2025	38956	126099	71000000	275773800

Source: Processed data (2025)

Equation 1 :

$Qd = \beta_0 + \beta_1 PKPL + \beta_2 YPC + \beta_3 POP + e$ ..... (1)

Where :

QDPL = demand for nutmeg
PKPL = Nutmeg price
YPC = income per capita
Pop = number of inhabitants
e = error

The selection of factors influencing nutmeg demand is based on theories and empirical experiences from several studies conducted by (Rafika et al., 2023), (Tirto. id,2023) (Sagala, 2020), (Orchida Indahwaty T et al., 2023), (Pria Indirasardjana, 2020), (Zuhdi & Agribisnis, 2016) demand is primarily determined by price, per capita income, and population. The next step to take is model testing.

Model Evaluation

The model obtained from each regression needs to be evaluated for its validity. The tests for each model are based on the model and regression method used. This study

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

uses a simultaneous equation regression model with the ordinary least squares (OLS) method. The tests used are as follows: (a) model reliability test by checking the R2 value, which is close to 1. The R2 value explains the extent to which the independent variable can explain the variation of the dependent variable. When the R2 value approaches 1, this indicates a higher level at which the variation of the dependent variable can be explained by the independent variable (Koutsoyiannis, 1977). (b) F Statistic Test: This test determines whether all independent variables can explain the dependent variable. (c) t Statistic Test, this test is to determine whether each independent variable significantly affects the dependent variable at the ÿ level.

DISCUSSION RESULTS

RESULTS

Determination of factors affecting nutmeg demand using simultaneous equation regression analysis and SAS program. Independent variables affecting nutmeg demand include price, per capita income, and population.

Table 1. Results of regression analysis of factors influencing nutmeg demand

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t value	Pr > |t|
Intercept	1	90784.24	26168.84	3.47	0.0018
PKPL	1	0.071454	0.124882	0.57	0.5719
YPC	1	0.000847	0.000129	6.56	<.0001
POP	1	-0.00039	0.000137	-2.87	0.0078

Var. dependent QDPL
R-square = 0.81069
Adj R-Square = 0.789
F-count = 38.54
Pr >F = < 0. 0001
Note: *) Significant at the α level = 10%

The R-square value of 0.81069 indicates that this model can explain about 81.07% of the variation in nutmeg demand. This means that most of the changes in nutmeg demand can be explained by the variables in the model, while 18.93% of the variation is

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

explained by other factors not included in the model. The F-count value of 38.54 with a p-value <0.0001 indicates that this model is very significant overall, with a strong relationship between the variables tested.

The intercept of 90,784.24 with a p-value of 0.0018 is statistically significant, meaning that when all independent variables in the model are zero, the demand for nutmeg is estimated at 90,784.24 units. However, since this condition rarely occurs in the real world, the intercept value serves more as a reference point for the model.

The effect of nutmeg price (PKPL) on demand is not statistically significant. A coefficient of 0.071454 and a p-value of 0.5719 indicate that changes in nutmeg prices do not significantly affect demand for nutmeg. Theoretically, an increase in the price of a commodity will usually decrease demand. However, in this model, the estimation results show that the demand for nutmeg could be more elastic to price changes. This is due to inelastic demand, which means that price changes do not significantly affect the amount of demand. This can happen because nutmeg is a commodity with limited use, such as in the spice industry, traditional medicine, or exports. Consumers who need nutmeg still buy it even though the price fluctuates, so price changes do not significantly affect demand. Substitution factors also affect; for example, in some cases, if the price of nutmeg increases, other substitutes are used by consumers or industries that need nutmeg. However, this substitution is rare because nutmeg is a specific commodity. This can also explain why price does not affect demand much— consumers do not have many alternatives or are accustomed to fluctuating prices.

On the other hand, income per capita (YPC) significantly affects the demand for nutmeg. The coefficient of 0.000847 with a p-value <0.0001 indicates that increased income per capita will increase the demand for nutmeg. This is in line with economic theory, where an increase in consumer income usually drives an increase in demand for goods and services, including commodities such as nutmeg. This means that when people's income increases, their purchasing power also increases, so the demand for commodities that are considered luxury goods or high-value commodities, such as nutmeg, will increase. Other causes include the role of exports and international competitiveness; in some cases, income per capita can also be related to increased investment in sectors that use nutmeg in the domestic and international markets. The growing food, cosmetic, and pharmaceutical industries increase the demand for nutmeg as a raw material.

An interesting result is the negative effect of population (POP) on the demand for nutmeg. The coefficient of -0.00039 with a p-value of 0.0078 indicates that every increase

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

in population reduces the demand for nutmeg. This seems contradictory but can be explained by several factors, including that even though the population increases, the preference for nutmeg consumption decreases or changes in consumption patterns where other commodities replace nutmeg in daily consumption. In a developing society, there is a tendency to shift to more modern products or other substitutes considered more accessible. Nutmeg is seen as a traditional product that is only in demand by specific segments of the population, so with increasing population, the demand for nutmeg decreases because more people switch to substitute products or other commodities.

Nutmeg is a product with specific demand mainly used in certain industries or smaller market segments. As the population increases, the number of consumers who need nutmeg remains relatively constant, or even decreases, because not all new residents or the younger generation consume this product in significant quantities. With the increase in population, especially in urban areas, consumption patterns tend to shift from traditional commodities such as nutmeg to products that align with urban lifestyles. The demand for nutmeg is more significant in rural areas or communities that still maintain its traditional use. With increasingly rapid urbanisation, traditional spices such as nutmeg can be consumed.

Overall, the analysis results show that the variable that has the most significant influence on nutmeg demand is per capita income. Increased community income drives increased demand for nutmeg, reflecting an income-elastic consumption pattern. On the other hand, although population growth is expected to increase demand, its effect is negative, indicating that other factors may influence nutmeg consumption in the context of a larger population. Although expected to have an effect, Nutmeg price does not show a significant relationship with demand, indicating that demand for nutmeg is more driven by factors other than price. By understanding this relationship, producers and policymakers can formulate better strategies to improve the competitiveness of nutmeg products in the export market.

Model Evaluation

Model reliability test in the form of determination coefficient, based on Table 1, the Adj R-Square value is 0.789. The interpretation of this value is that variable x affects variable y by 78.9 per cent. (b) For the f-statistic test, the calculated F-statistic value obtained by this model is 38.54 with a p-value of 0.0001. If the significance value <0.05, variable x jointly affects variable y. (c) Statistical test t, the results of multiple regression analysis revealed that three independent variables show a significant impact at a

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

significance level of 5% (ÿ = 5%). As depicted in Table 1, all variables align with anticipated expectations and comply with economic theory.

DISCUSSION

The regression analysis findings show that the price of nutmeg does not have a statistically significant effect on the demand for this commodity, with a coefficient of 0.071454 and a p-value of 0.5719. This indicates that price fluctuations do not significantly impact changes in demand for nutmeg, which, in theory, is an exception to the classical law of demand. Usually, an increase in the price of a product will cause a decrease in demand, but in the context of nutmeg, this finding shows that the demand for nutmeg tends to be inelastic. This finding also reflects the unique characteristics of nutmeg as a commodity with a particular market, where demand is not sensitive to price changes common to other commodities (Maswadi, 2021; Indahwaty et al., 2023).

Research shows that the demand for nutmeg is inelastic due to its use in specific industries such as food, pharmaceuticals, and cosmetics. In this context, companies that require nutmeg as a raw material tend not to be affected by price fluctuations because nutmeg is a material that is difficult to replace. For example, in the pharmaceutical industry, nutmeg is used for certain herbal products, while in cosmetics, nutmeg is an essential ingredient for organic and natural-based products. This means that even though the price changes, the demand for nutmeg remains stable due to the needs of the industry (Purwiyanti et al., 2018).

Furthermore, the low price elasticity of nutmeg is also due to the limited availability of substitute products. Substitute products for nutmeg, such as other spices or synthetic extracts, do not have the same properties or benefits. Many manufacturers, especially in the high-quality food and cosmetics industry, require unique qualities and flavours that only nutmeg can produce. Therefore, even though the price of nutmeg has increased, manufacturers still choose nutmeg because it is difficult to find substitutes with the same characteristics. This is reinforced by the characteristics of the nutmeg export market, where demand from countries such as the United States and Europe tends to focus more on quality than price (Maswadi, 2021).

In addition, these findings are also relevant in the context of the domestic market, although with some exceptions. In the Indonesian domestic market, nutmeg prices may significantly impact demand if competition with substitute products is stronger. For example, domestic consumers may be more likely to switch to other products if nutmeg prices increase sharply. However, in general, nutmeg demand in the international market

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

shows more excellent stability, regardless of price fluctuations, due to the global industry's needs that prioritise the quality of raw materials (Wadud, 2015).

These market conditions provide a solid basis for policy simulations focused on increasing the added value of nutmeg products. Price stabilisation policies that are usually used for other commodities will not have a significant impact on increasing demand for nutmeg. Instead, the government and producers should focus more on strategies that improve product quality and differentiation. One policy that can be implemented is to support producers in obtaining quality certification, such as organic products, fair trade, or halal certification, which are increasingly valued by global consumers in the food and cosmetics sectors (Indahwaty et al., 2023).

Policies supporting nutmeg product differentiation through strong branding can also be implemented in the context of export promotion. For example, the government can work with exporters to create an image of nutmeg as a unique, high-quality product for the international market. In addition, promotion in quality-sensitive markets, such as Western European and North American countries, can help strengthen Indonesia's position as a producer of high-quality nutmeg. These efforts can be carried out through international trade exhibitions, promotions in large distribution networks, and digital marketing campaigns that focus on the advantages of nutmeg products from Indonesia (Maswadi, 2021).

On the other hand, although prices are not significant in the context of international markets, there is potential for the government to develop policies that maintain price stability in the domestic market. For example, price stabilisation policies or reductions in distribution costs can maintain the competitiveness of nutmeg in the domestic market, especially when substitute products are easier to find. This will help domestic producers to remain competitive in a market that is more vulnerable to substitution and intense price competition (Wadud, 2015).

Another policy that can be implemented is subsidies for small farmers to invest in technology that increases production efficiency without reducing product quality. Thus, even though nutmeg prices fluctuate, producers can maintain their competitiveness by increasing efficiency and product quality. This subsidy can also support farmers in improving post-harvest processing processes to produce products that meet higher international market standards (Purwiyanti et al., 2018).

Another finding of this study shows that per capita income has a very significant effect on the demand for nutmeg. The coefficient of 0.000847 and p-value <0.0001 indicate that when per capita income increases, the demand for nutmeg also increases.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Economic theory states that when consumer income increases, they tend to allocate more money to high-value or luxury goods, including nutmeg. Nutmeg is considered a high-value good because of its use in gourmet food products, premium cosmetics, and health products (Wan et al., 2009).

These findings also highlight the importance of international markets, especially countries with high per capita income, in determining the demand for nutmeg. In export markets, increasing per capita income in countries such as the United States and Europe is often directly related to increased demand for high-quality products such as nutmeg. Consumers in these countries are more likely to consume products that are considered premium, especially in the organic food and natural cosmetics industries. This demand is susceptible to changes in income, with increased income leading to increased consumption of high-value products (Indahwaty et al., 2023).

One relevant policy to this finding is a trade policy focusing on reducing trade barriers in countries with high per capita income. A policy simulation that can be implemented includes a bilateral trade agreement that allows nutmeg exports from Indonesia to major markets such as Western Europe, North America, and East Asia at lower tariffs. By reducing trade barriers, Indonesian nutmeg exports can increase along with the increase in consumer purchasing power in these countries (Cleasby et al., 1991).

In addition, the government can encourage business actors to target more specific market segments, especially those with higher purchasing power. For example, nutmeg derivative products, such as nutmeg oil or nutmeg extract for cosmetics, can be marketed more aggressively in the middle to upper-class market. Rising incomes in developed countries are often associated with higher demand for organic and natural products. Therefore, promotional policies targeting this segment by emphasising health benefits and sustainability can increase demand for nutmeg (Indahwaty et al., 2023).

Another policy simulation that can be implemented is to encourage investment in product innovation and processing technology to increase the added value of nutmeg. The government can incentivise companies investing in nutmeg processing technology into value-added products such as essential oils or natural cosmetic products. This will help increase the competitiveness of nutmeg products in the global market, especially in market segments sensitive to quality and health (Wadud, 2015).

These findings also support policies that focus on diversification of nutmeg-based products. With increasing per capita income in export destination countries, derivative products such as nutmeg-based processed foods or health products have excellent growth potential. The government can support the development of these new products

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

through research and development (R&D) programs that focus on nutmeg product innovation. In addition, support in the form of tax incentives for companies conducting research and development in this sector can help increase the number of value-added products exported to international markets (Yang et al., 2003).

Creating a policy framework that supports the growth of foreign direct investment (FDI) in the nutmeg processing sector is also essential. Foreign investment in nutmeg product processing can bring new technology and knowledge that help increase the added value of products and Indonesia's competitiveness in the global market. Policies that attract this investment, such as tax incentives or ease of business permits, can effectively increase nutmeg's contribution to the national economy (Cleasby et al., 1991).

On the other hand, increasing per capita income can also increase nutmeg consumption in the domestic market, especially among the growing middle class. The government can design policies that promote the consumption of nutmeg products in the domestic market, such as consumer awareness campaigns about the health benefits of nutmeg. This program can include cooperation with the private sector, such as food manufacturers or cosmetic companies, to promote nutmeg as a safe and beneficial natural ingredient (Wadud, 2015).

Another interesting finding from this study is that population growth hurts nutmeg demand, with a coefficient of -0.00039 and a p-value of 0.0078. This result may seem inconsistent with expectations, but it can be explained by changes in consumption preferences in growing urban communities. Rapid urbanisation and rapid population growth, especially in large cities, have caused a shift in consumption preferences from traditional products such as nutmeg to more modern and practical products (Purwiyanti et al., 2018).

Urbanisation and lifestyle changes in urban communities affect consumption patterns, where consumers prefer more practical, ready-to-use products than traditional spices such as nutmeg. In urban communities, the younger generation especially prefers food products that are more easily accessible and do not require complicated preparation. It means that despite the population increasing, the demand for nutmeg as a traditional commodity is decreasing in urban areas (Wadud, 2015).

Policy simulations that can be implemented to address this decline in demand include the development of nutmeg-based products that are more ready to consume and practical. The government can support the development of processed food industries that use nutmeg as an essential ingredient, such as instant spices, health capsules, or beverage products that use nutmeg extract. These products align with the preferences of

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

urban consumers who want practical and ready-to-use products. Support in the form of research and development subsidies to create innovative nutmeg-based products can also be provided to business actors (Indahwaty et al., 2023).

In addition, policies promoting nutmeg's health benefits among urban consumers can help increase demand. The government can conduct health awareness campaigns that emphasise the benefits of nutmeg as a natural ingredient with various health benefits. These campaigns can collaborate with the food and pharmaceutical industries to promote nutmeg-based products as part of a healthy lifestyle. Linking nutmeg to health and sustainability consumption trends can increase demand for nutmeg among urban consumers (Purwiyanti et al., 2018).

Another policy that can be implemented is the diversification of nutmeg use in non-food sectors, such as the cosmetics and pharmaceutical industries. These industries continue to grow along with urbanisation, and demand for natural-based products continues to increase among urban consumers. The government can support the development of the cosmetics industry that uses nutmeg as the main ingredient, primarily through tax incentives or subsidies for companies that invest in developing natural-based cosmetic products (Wadud, 2015).

Thus, although overall population growth has shown a negative impact on nutmeg demand, appropriate policies can help address this challenge by developing products that better suit the needs of urban consumers.

CONCLUSION

This study found that nutmeg price has no significant effect on demand, with a coefficient of 0.071454 and a p-value of 0.5719, indicating that nutmeg demand is inelastic due to price changes. It indicates that price fluctuations do not impact consumer behaviour, especially in international markets prioritising product quality. As a policy response, the government and industry players must focus more on improving product quality and added value rather than relying solely on price stabilisation. Export promotion policies and providing quality certification such as organic or fair trade products will be more effective in increasing competitiveness in the global market than price intervention.

On the other hand, per capita income significantly affects demand, with a coefficient of 0.000847 and a p-value <0.0001, indicating that increasing income drives an increase in demand for nutmeg. Therefore, trade policies that strengthen trade relations with high-income countries such as the United States and European countries can increase demand for nutmeg. Policy simulations can include reducing tariff barriers

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

and promoting high-value nutmeg derivative products in these international markets. Product innovation is also essential, with government support for research and development (R&D) of nutmeg derivative products such as oil or extracts that align with the needs of middle to upper-class consumers.

Meanwhile, the finding that population hurts demand, with a coefficient of -0.00039 and a p-value of 0.0078, indicates a shift in consumption preferences in urban communities. The younger generation tends to choose modern and practical products. In this case, the policy that needs to be implemented is to support innovation of nutmeg-based products that align with modern consumption trends, such as nutmeg-based processed foods or practical health products. In addition, promotional campaigns about the health benefits of nutmeg can be carried out among urban consumers to increase awareness and demand for this product.

Overall, this study shows that policies that encourage product innovation, strengthen international markets, and promote sustainability in the agricultural sector can improve the competitiveness of Indonesian nutmeg in the global market. The government also needs to support the diversification of nutmeg-based products and investment in processing technology to add value to the commodity.

However, this study has limitations. One of the limitations is the use of secondary data obtained from various sources, such as FAO and the Indonesian Central Bureau of Statistics, which may have limitations regarding accuracy and timeliness. This study also only focuses on four main variables, namely nutmeg price, per capita income, population, and nutmeg demand, so it does not take into account other variables that may also play a role, such as changes in consumer preferences, shifts in consumption patterns, and socio-cultural factors. In addition, the results of this study mainly apply to the context of the nutmeg export market in Indonesia, so the results may not be generalisable to other countries with different market conditions.

Further studies are needed to deepen the understanding of changes in consumption preferences among the younger generation, especially in urban areas. This generation tends to choose modern products, which has the potential to reduce demand for traditional commodities such as nutmeg. Future research should also explore the impact of climate change on nutmeg production, considering that climate change can significantly affect agricultural production, including the quality and quantity of nutmeg yields. This research can also explore the diversification of nutmeg-based products, such as nutmeg oil or extract, which can open new opportunities in the market and provide higher added value for farmers and producers.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

In addition, a more in-depth study of the nutmeg value and supply chain, from upstream to downstream, is essential to understanding the efficiency at each stage of production and distribution. This can provide better insight into where improvements can be made to increase the product's competitiveness in the international market. Future research can also explore the impact of international trade policies on the nutmeg market, including tariffs, export regulations, and factors that influence global trade.

By addressing this study's limitations and focusing on aspects that have not been explored, future studies can provide deeper insights into the dynamics of the nutmeg market and contribute to the development of the agribusiness sector, ultimately improving the welfare of communities that depend on this commodity.

BIBLIOGRAPHY

Alta, A., Auliya, R., & Fauzi, AN (2023). Barriers to Achieving Healthier Food Consumption: The Case of Trade and Agricultural Policy. Policy Paper, 54 (54), 123.

Asrol, & Heriyanto. (2017). EXPORT COMPETITIVENESS OF INDONESIAN NUTMEG IN THE INTERNATIONAL MARKET Indonesia's Most Export Competitiveness In The International Market. Journal of Agricultural Dynamics, XXXIII (2), 179–188.

Global Economic Dynamics and Its Impact on Indonesia This article has been published on the Financial Media | MK+ website under "Global Economic Dynamics and Its Impact on Indonesia—Financial Media" (nd).

Directorate General of Plantations. (2023). The Ministry of Agriculture continues to increase national export foreign exchange sources from the non-oil and gas sector—Ministry of Agriculture. https://ditjenbun.pertanian.go.id/kementan-terus-tingkatkan-sumber-devisa-ekspor-nasional-dari-sektor-non-migas/#:~:text=Leading plantation commodities such as," (15%2F02).

Iswanti, P., & Dhea Permata Sari, C. (2023). Global Pricing Analysis in International Marketing: Pricing Strategies and Factors. Jurnal Masharif Al-Syariah: Journal of Islamic Economics and Banking, 8 (30), 1082–1088. https://doi.org/10.30651/jms.v8i4.21227

Komarek, A.M., Dunston, S., Enahoro, D., Godfray, HCJ, Herrero, M., Mason-D'Croz, D., Rich, K.M., Scarborough, P., Springmann, M., Sulser, T.B., Wiebe, K., & Willenbockel, D. (2021). Income, consumer preferences, and the future of livestock-derived food demand. Global Environmental Change, 70 (August), 102343. https://doi.org/10.1016/j.gloenvcha.2021.102343

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Orchida Indahwaty T, Djaimi Bakce, & Novia Dewi. (2023). Response of Supply and Demand of Indonesian Nutmeg in the International Market. Agrica Journal, 16 (1), 29–40. https://doi.org/10.31289/agrica.v16i1 .7789

Pria Indirasardjana. (2020). 2020 Indonesia in the National Oil Crisis Disaster. https://books.google.co.id/books?id=OxtQDwAAQBAJ&lpg=PP1&ots=kX5u2wr777&dq=The value of the United Arab Emirates' nutmeg exports increased rapidly in 1994 and 2007 due to global market demand for nutmeg, especially from countries in Europe and America.

Rafika, LA, Astuti, S., & Safitri, C. (2023). Factors Affecting Consumer Demand for Raja Tea. Ekonomikawan: Journal of Economics and Development Studies, 23 (1), 96–

Sagala, IM (2020). Analysis of Factors Affecting Soybean Demand in North Sumatra Province. Agrisamudra Research Journal . https://ejurnalunsam.id/index.php/jagris/article/view/2198

Tirto. Id. (2023). Factors Affecting Demand and Supply. https://tirto.id/faktor-faktor-yang-mempengaruhi-permintaan-dan-penawaran-gjbb

Zuhdi, F., & Agribisnis, D. (2016). Competitiveness Analysis of Indonesian and Vietnam Coffee Export in Asean 5 Market. Habitat, 26 (3), 152–162.

Cleasby, R., Darroch, M., & Dushmanitch, V. Y. (1991). The demand for and supply of South African deciduous fruit exports: A dynamic analysis. Agrecon , 30, 241-243.

Indahwaty, O., Bakce, D., & Dewi, N. (2023). Response to supply and demand for Indonesian nutmeg in the international market. AGRICA JOURNAL.

Maswadi, M. (2021). Global (nutmeg in shell) trading: Trade and integration of international markets. AGROLAND The Agricultural Sciences Journal.

Purwiyanti, S., Sudarsono, N., Wahyu Endro Kusumo, Y., & Rostiana, O. (2018). Pollen donor position and climate factor affecting fruit production of nutmeg—Research Bulletin of Spices and Medicinal Plants.

Wadud, Z. (2015). Decomposing the drivers of aviation fuel demand using simultaneous equation models. Energy, 83, 551-559.

Wan, L., Zhang, Y., & Wang, G. (2009). Macro-micro factors affecting real estate demand analysis. 2009 International Conference on Management Science and Engineering, 1988-1993.

Yang, S., Chen, Y., & Allenby, G. M. (2003). Bayesian analysis of simultaneous demand and supply. Quantitative Marketing and Economics, 1, 251-275.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.