Analysis of Factors Affecting Fish Consumption Export (Case Study: FQS FPQSC Cirebon)

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Authors' contributions

This work was carried out in collaboration among all authors. Author FNH designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AR and DS managed the analyses of the study. Author AAHS managed the literature searches. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

The aim of this study is to analyze the factors that have a significant effect on the export volume of fish consumption (Case study: FQS FPQSC Cirebon). The method used in this FPQSC Cirebon. This research was the case study method. This study was conducted in September 2019 until March 2020 which took place in FQS FPQSC Cirebon, PT. Timur Jaya Cemerlang and PD. Sambu. The research method used is quantitative descriptive method by sampling techniques, namely census sampling and purposive sampling methods. The type of data used is secondary data and primary data utilizing by means of multiple linear regression analysis by the classical assumption test and statistical test. The results of this study found that the most significant factors affecting the fish consumption exports in Cirebon was the number of export destination countries with a significant value of 0.024 when seen from the α value of less than 0.05. If there are many

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export destination countries, the export volume will tend to increase and if export destination countries decline, the export volume will also decrease and It is necessary to add other variables to support research of 0.024 or less than the α requirement of 5% (0.05) countries.

Keywords: Fish consumption; Cirebon; export; export destination country.

1. INTRODUCTION

Fish consumption are all resources fish in fresh or sea water that can be consumed by humans. Consumption of fish can be interpreted as all marine and freshwater biologics that contain high protein and have important significance for economic interests [1]. The fish in Indonesia consist of various types and advantages. The large number of fish in Indonesia makes it one of the most reliable export commodities in increasing the country's foreign exchange, expanding markets for Indonesian products, and expanding employment opportunities [2].

Export is one of effort to shipping and selling goods and services produced domestically to another country. The high volume exports can be impact to demand for the domestic currency to rise and the rupiah to strengthen. The high volume of exports also can be impact to labor in a country to be fully absorbed so that unemployment decreases and increases per capita income of the country, so purchasing power [3]. High world demand and commodity prices in international markets can be support to increased natural resource-based exports [4].

Fish Quarantine Station, Fishery Product Quality and Safety Control (FQS FPQSC) noted that in 2017 around 10.9 tons of fishery exports were certified and valued at 850.000USD. While the types of fish offered include snapper, bloating, and tuna. Meanwhile, the main export destination countries are Taiwan, Thailand, Vietnam, Korea, China, and several European countries such as East Germany, West Germany, and Russia [5]. The purpose of this study is to analyze the factors which are needed significantly to the export volume of fish consumption case study in FQS FPQSC Cirebon. Cirebon in Indonesia.

2. MATERIALS AND METHODS

2.1 Time and Place

This research was conducted in September 2019 until March 2020 which took place in Fish Quarantine Station, Fishery Product Quality and Safety Control (FQS FPQSC) Cirebon, PT. Timur Jaya Cemerlang and PD. Sambu. FQS FPQSC Cirebon located on street Cideng Indah No. 236 A Kedawung, Cirebon Regency. While PT. Timur Jaya Cemerlang is located in the coastal area of Samadikun Cirebon and PD. Sambu is located on street Kalijaga 1 Kejawan Archipelago Fisheries Port Complex, Lemahwutut Cirebon, Indonesia. (FQS FPQSC) Cirebon, PT. Timur Jaya Cemerlang and PD. Sambu (Fig. 1) is the location of research.

2.2 Research Methods

This research uses quantitative descriptive method case studies. The sampling technique used in this research was divided into two technique. The sampling technique used in this study was divided into two techniques, the first was obtaining export data from FQS FPQSC Cirebon using census sampling. The second technique is purposive sampling technique. This technique is used to conduct interviews with fish consumption companies to legal entity exporters in Cirebon. Primary data obtained from interviews with PT. Timur Jaya Cemerlang and PD. Sambu export companies in Cirebon with 5 representatives from the company. Secondary data is devided into two parts, time sheries data and cross check data obtained from FQS FPQSC Cirebon, data collected in a 48 month period over the past 4 years.

2.3 Type and Source Data

Type of data used in research is primary data and secondary data, primary data obtained from interviews with export companies in Cirebon. Secondary data is devided into two parts, time sheries data and cross check data. Time sheries data have been collected by intuition related within a period of 48 month for 4 years periodically and cross check data from various existing literature. Sources data obtained from various related agencies, and from exporting companies, including the Fish Quarantine Station, Fishery Product Quality and Safety Control (FQS FPQSC) Cirebon, PD. Sambu, and PT. Timur Jaya Cemerlang.
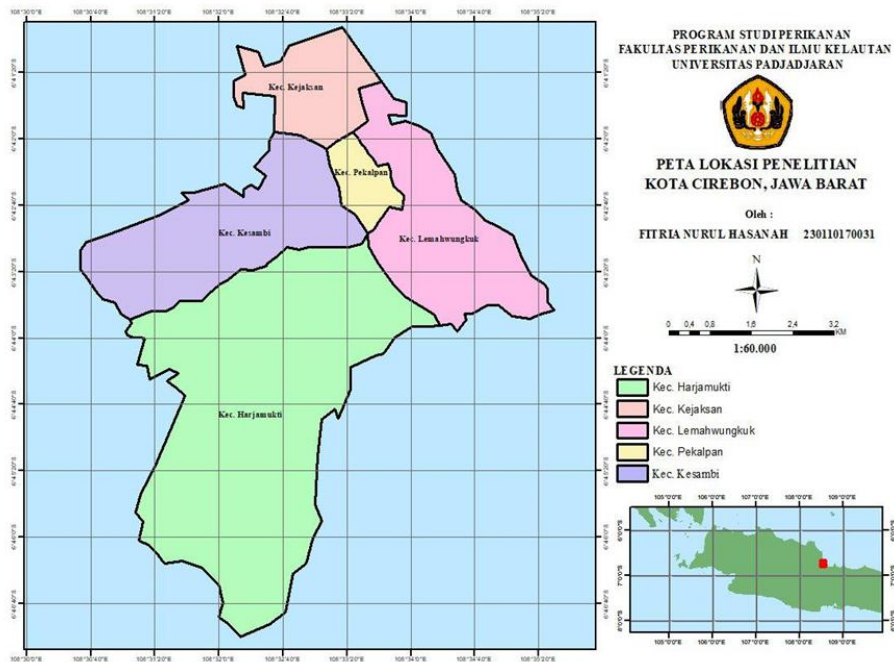
Fig. 1. Map location of research

2.4 Data Analysis

Analysis of the data used is multiple linear regression analysis. With the factors that are independent variable, thought to have a significant influence on the fluctuating volume of fish consumption exports in Cirebon which include (1) the number of species of fish exported (JI), (2) the price of domestic fish consumption for importing countries (HID), (3) the price of fish consumption abroad (HIL), (4) the number of export destination countries (TNE), (5) the exchange rate of USD to Rupiah (NT). After the independent variables and dependent variables are determined, it will be tested first to be able to be worthy of further testing. This test is a classic assumption test which consists of normality test, heteroscedasticity test, autocorrelation test and multicollinity test. Then proceed with making a model with a statistical test consisting of the R-squared test, ANOVA (F test, and T test) [6].

3. RESULTS AND DISCUSSION

3.1 General Description

This research takes data in FQS FPQSC Cirebon, PD. Sambu, and PT. Timur Jaya Cemerlang. PT. Timur Jaya Cemerlang exports a lot of its products to several countries such as xinggang, china, and singapore. The volume of fish consumption exports at PT. Timur Jaya Cemerlang fluctuated in the 2014-2018 period, the lowest export volume was in 2016 which was 99.323 kg and the highest occurred in 2018 which was 284.688 kg whereas PD Sambu exports other marine fishery products such as shrimp and squid to destinations such as taiwan. the volume of fish consumption exports that occur in PD. Sambu the 2015-2018 period fluctuations occurred, the lowest consumption fish export volume occurred in 2017 at 3.528.625,80 kg, while the highest was in 2016 at 5.043.510,18 kg.

3.2 Analysis Model

Analysis model of the factors that influence fish consumption exports with a case study in FQS FPQSC Cirebon. FPQSC Cirebon that has been made for the research, must meet certain criteria in testing classical assumptions which are the results of the thesis.

3.3 Normality Test

The Normality test is conducted to find out whether the export volume is normally distributed or not to the alleged independent variables. The test results can be described in Fig. 2.

3

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: VE
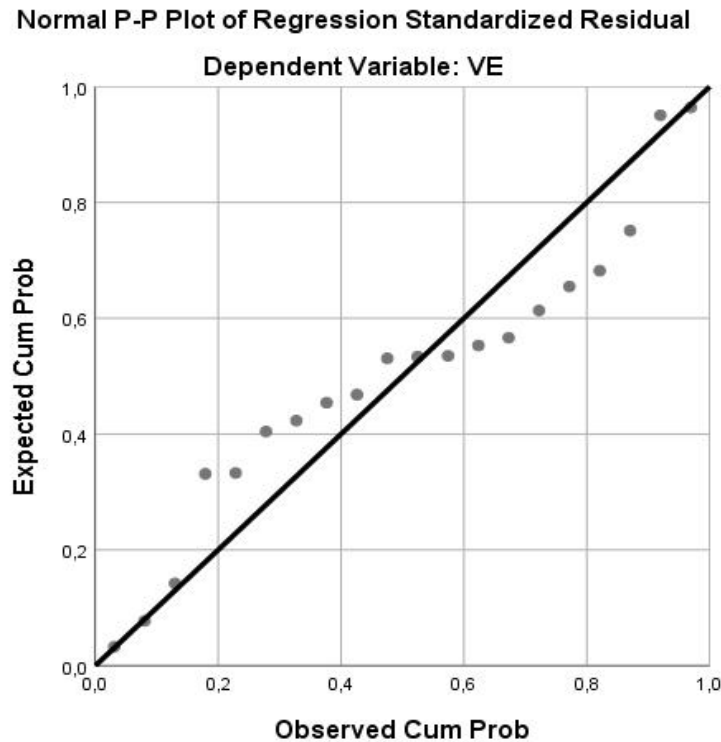
Fig. 2. Normality test

Based on the results of the normality test, it is found that the plots formed are normally distributed to the lines on the graph that have been formed. These results were obtained from calculations with the Kolmogrov Smirnov test. Overall the value of Kolmogorov Smirnov produces a value of less than α 0.05 including the type of fish produces a value of 0.001, the price of fish consumption in Cirebon for the importing country produces a value of 0.003, the price of fish abroad produces a value of 0.020, the value of the export destination country produces a value of 0.002 and the value Currency exchange rate producesyields a value of 0.000.

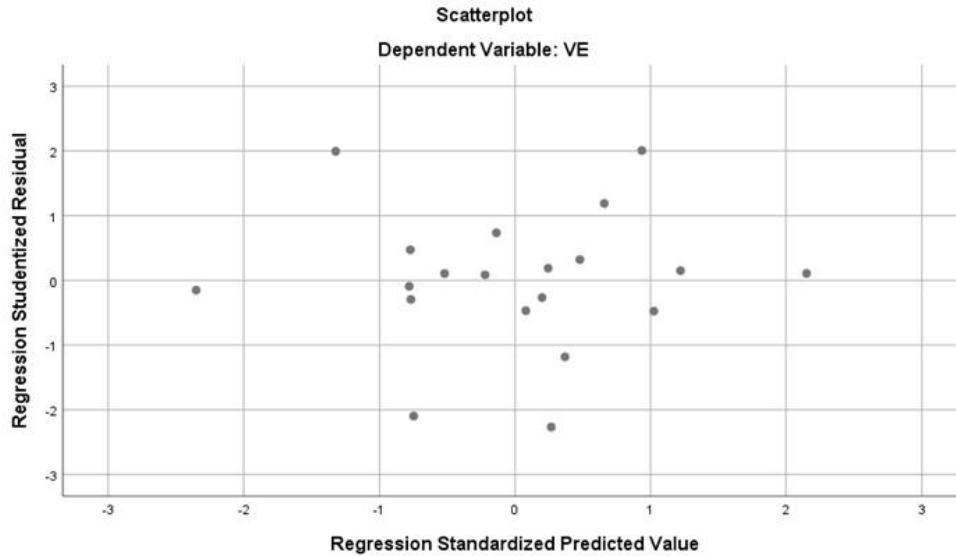### 3.4 Heteroscedasticity Homocedasticity Test

The heteroscedasticity test is used to see whether there is a constant or not, it needs a constant residual variance that occurs homoscedasticity in the model that has been made.

This test looking at the plots that are formed in a scater [6]. Requirements that must be fulfilled in this test model are the formation of plots that are spread and not collect in one point or not form a certain pattern, or spread evenly below or above the shadow line of point 0 on the Y axis [7]. The test results obtained in this heteroscedaticity test tend to collect below the 0 line on the Y axis so it can be interpreted that this model is experiencing heteroscedasticity problems. This problem can be overcome by increasing the time in observation so that it can improve the results obtained and can also determine the right variables to achieve homocedasticity [7].

3.5 Multicolinerity Test

The multicolinerity test is conducted to see whether one independent variable is influencing the other independent variables in the model created [6]. Multicollinity test can be seen from the Variance Inflation Factors (VIF) value, VIF value assessment <10, then this assessment does not have multicollinearity problems, based on the results of data processing obtained by independent variables obtained with a VIF value <10 states [8] if VIF value <10 then it can be interpreted there is no need for multicollinearity in the research.

Fig. 3. Heteroscedasticity test

Table 1. Multicolinerity test result

No	Subject	VIF
1.	Types of fish consumption are dominant in exports (JI)	1,118
2.	Domestic fish price in importing countries (HID)	1,089
3.	Prices of fish consumption abroad (HIL)	1,430
4.	Number of export destination countries in Cirebon (TNE)	1,566
5.	USD exchange rate against rupiah (NT)	1,294

Table 2. Autocorrelation test result

Model	R	R square	Adjusted R square	Std error the estimate	Durbin-Watson
1	,696	,484	,300	,73710	1,147

3.6 Durbin-Watson Test

Autocorrelation test is used to determine whether there is an error relationship between present errors and past errors in the model that has been made that can cause the parameters to be biased, so the estimation parameters are inefficient. The autocorrelation test is only performed on time series data, to prove the presence or absence of autocorrelation by looking at the values from the Durbin Watson table [9]. Based on the data obtained Durbin Watson's value of 1.147 which can be seen in Table 2.

The Durbin Watson values obtained can be seen from the du (upper limit of Durbin Watson) and dl (lower limit of Durbin Watson) values obtained from the Durbin Watson table, with a dl value of 0.7918 and a du value of 1.9908. The value that has been obtained is then interpreted in the autocorrelation identification framework table with the following results dl < DW < du with a value of 0.7918 <1.147 <1.9908 which means that the tests carried out are inconclusive or cannot be concluded so that if the concluded model is created there is no problem autocorrelation.

3.7 Export Model of Fish Consumption in Cirebon

The model that has been made ideally can determine which factors are most significant that affect the volume of fish consumption exports in Cirebon, the results of the regression model can be seen in the model and the Table 3: Y = 0,870JI-0,008HID+0,022HIL+2,532TNE+0,347NT.

Table 3. Export regression result of fish consumption in Cirebon

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	Export volume	7,807	20,233		,386	,705
	JI	0,870	,787	,224	1,105	,288
	HID	-,008	,321	-,005	-,024	,891
	HIL	,022	,068	,073	,318	,755
	TNE	2,532	1,002	,607	2,527	,024
	NT	0,347	7,549	,010	,046	,964

Tangible at 5% level

3.8 R Square

R-Square or the coefficient of determination is one of the simple measures and is often used to get the quality of a regression line equation [10]. The R-Square value provides an overview of the suitability of the independent variable in predicting the dependent variable in a model. Based on the model, R square value of 0.484 means that 48% of the independent variables affect the export volume and the remaining 52% of other changes variables are not used in making the model. The results obtained turned out to be more successful then it can be interpreted that the model made is less able to be explained about the variables carried out on the independent variables.This is according to the definition [3], a small value means that the ability of the independent variable to explain free variation is very limited. The value issued by one means that the independent variables provide almost all the information needed to predict the variation of the accepted variable. If the coefficient value determines the greater, the greater the needs of all variables, free in explaining the variation of the agreed variables.

3.9 Variance Analysis of the Regression (F test)

F test is a test used to determine whether the independent variables together or simultaneously have a real effect or not on the dependent variable. The results of the F test on the model created obtained a significant value of 0.071 which means that the value is greater than the α value of 0.05, therefore the independent variables simultaneously do not significantly influence the dependent variable. The calculated F value obtained in the model is 2.625 and the F table value is 2.90 which will answer the hypothesis that the F count <F table is 2.625 <2.90 then H0 is accepted and H1 is rejected, meaning there is no significant effect between independent variable of the dependent variable in a model that has been made. The results can be seen in the Table 4 F test. Therefore, the model is not significant and the prediction values made with it can lead to misinterpretation.

3.10 T Test

T test is a test to find out whether explanatory variables or independent variables are not associated with real variables (significant) or not real (not significant) to the variables taken in the model [6]. From the results of T count can be compared with T Table 5 of 2.131. Related to the independent variables obtained what is evident to the accepted variable, seen from the data below, about the actual export destination exports to the volume of fish consumption exports in Cirebon with a value of 2.572. This value states that T arithmetic >T table then H0 is rejected and H1 is accepted then the independent variable significantly affects the dependent variable, Which should be accounted for from the number of export destinations to the export volume of fish consumption in Cirebon.

Table 4. Test result in regression models

Model		Sum of squares	Df	Mean square	F	Sig.
1	Regression	7,131	5	1,426	2,625	0,071
	Residual	7,606	14	0,543		
	Total	14,737	19			

6

Table 5. Result from T count in regression models

No	Independent variable	T	Sig.
1.	Type of Fish for Export (JI)	1,105	,228
2.	Fish Consumption Price in this Country for Importing (HID)	-0,24-,024	,981
3.	Fish Consumption Price Abroad (HIL)	,318	,755
4.	Number of Export Country Destinations (TNE)	2,527	,024
5.	USD Exchange Rate Against Rupiah(NT)	,046	,968

Table 6. Data on the amount of fish consumption type in

No	Year	Type of fish consumption	Volume export (Kg)
1	2016	22	1.003.033,33
2	2017	22	1.942.513,33
3	2018	23	2.649.127,50
4	2019	26	2.916.820,00

Tabel 7. Fish consumption price in the country

No	Year	Fish consumption price aboard (USD)	Volume export (Kg)
1	2016	10.782	1.003.033,33
2	2017	10.468	1.942.513,33
3	2018	10.783	2.649.127,50
4	2019	8.383	2.916.820,00

3.11 Type of Fish

The type of fish can affect the increase in export volume in a country because the type of fish offered is very varied and can increase the demand for fish exports this is in accordance with export demand [11]. For the USD exchange rate against rupiah based on the calculation results coefficient value of 0.870 means that for each increase in fish species by 1%, the volume of fish consumption exports in Cirebon will increase by 0.870%. This is justified by the data obtained from the FQS FPQSC from 2016-2019 per month increasing the volume of exports in accordance with the increase in types of fish produced [12]. Increasing the number of variations in the type of fish consumption in Cirebon will be one of the factors that oppose the increase in the volume of fish consumptionexports in Cirebon.

3.12 Fish Consumption Price in Cirebon

The price of fish consumption in Cirebon for importing countries will differ from the price of consumption of fish sold abroad or in the importing country because prices abroad will be adjusted to the value of the currency in each country so that the price of fish consumption varies greatly [13]. From the calculation, the coefficient value of the variable price of domestic fish consumption is -0.008, where the value

obtained is negative. This means that for every 1% reduction in the price of domestic fish consumption, it will increase the export volume of fish consumption in Cirebon by 0.008%. According to Siltonga and Mukhlis [14] which states that the higher the price of fish offered to importing countries, it will greatly affect the volume of export demanded and the higher the price will cause a decrease in demand so that the export volume will decrease. Below is a Table 7 of fish consumption prices in the country or importing country.

3.13 Fish Consumption Price Aboard

The price of exported fish consumption varies greatly depending on the country of export destination, this difference can be caused by the currencies of each different country. According to the statement [15] in [12] which states that the greater the price and demand of an item, the greater the country's desire to meet market or consumer demand. To generalize every currency in the USD export or import countries used. The USD is used because at the moment the USD holds full power in the world economy. The importance of knowing the price of fish consumption abroad is to find out whether the price changes that occur will affect or not the export volume of fish consumption in Cirebon, based on the calculation results in a coefficient of 0.022 this states that for every 1% increase in

prices, the export volume will increase 0.022% every year. Below is the price of fish consumption abroad as follows.

3.14 Amount of Export Destination Country

Fish consumption export activities in Cirebon are carried out to several destination countries in the world, a very diverse export destination country is one of the predictors of an increase in export volume. As more countries become export destinations, it is estimated that there will be more volumes of fish exported in one year [12]. The variable number of export destination countries produced during data processing was 2.532, which means that every increase in export destination countries made an increase in export volume by 2.532%, from the calculation results obtained significance value of the number of variables from export destination countries (TNE) in this case has the most significant value is 0.024 which means the value obtained is less than α 0.05 so it is considered as the variable that has the most significant value that can affect changes in export volume that occur in fish consumption in Cirebon. Free trade involves many destination countries that make each country involved can benefit each other or experience mutualism symbiosis so that they can consume more superior goods produced by each country involved in international trade, this can

affect the increase in export volume fish consumption [16]. The following is a Table 9 regarding fish consumption export transactions in Cirebon.

3.15 USD Currency Exchange Rate against Rupiah

An exchange rate is a measurement of the value of a currency that will be converted to another currency. Currency values vary greatly depending on the economic conditions that are happening in a country [17]. If the value of a currency decreases concerning other countries, the relative price will be cheaper, whereas if the value of the currency increases concerning other countries, the price tends to rise, this can affect the profits obtained both positively and negatively [2]. Based on the calculation results obtained a coefficient value of 0.347 which means that if there is a weakening (depreciation), the exchange rate of the rupiah against the destination country by one percent, will cause an increase in the export volume of fish consumption in Cirebon. amounted to 0.347%. According to Rizal et al. [18] if the exchange rate weakens (depreciates) then it will cause the export volume value to increase, and if the currency exchange rate increases, it will cause the export volume value to decrease. So that the exchange rate can cause fluctuating export volumes.

Table 8. Fish consumption price aboard

No	Year	Fish consumption prices aboard (USD)	Volume export (Kg)
1	2016	39.595,40	1.003.033,33
2	2017	39.595,40	1.942.513,33
3	2018	31.155,18	2.649.127,50
4	2019	15.446,53	2.916.820,00

Table 9. Amount of export destination country

No	Year	Amount of export destination country in Cirebon	Volume export (Kg)
1	2016	23	1.003.033,33
2	2017	25	1.942.513,33
3	2018	26	2.649.127,50
4	2019	28	2.916.820,00

Tabel 10. USD currency exchange rate against Rupiah

No	Year	USD currency exchange rate against Rupiah	Volume export (Kg)
1	2016	13.396	1.003.033,33
2	2017	13.466	1.942.513,33
3	2018	14.111	2.649.127,50
4	2019	14.115	2.916.820,00

4. CONCLUSION

Based on the results of research on the analysis of factors affecting the export of fish consumption (Case Study: FQS FPQSC Cirebon), the concluded that the factors suspected to affect exports of fish consumption include the types of fish exported, the price of fish consumption in the country / for the importing country, prices fish consumption abroad, the number of export destination countries, and the exchange rate of the USD against the rupiah. Based on the variables above, the most significant factor influencing exports of fish consumption with a case study in FQS FPQSC Cirebon is the number of export destination countries with a significant value of 0.024 when seen from the α value of less than 0.05. So it is suspected that the number of export destination countries will affect the ups and downs of the export volume of fish consumption in FQS FPQSC Cirebon. If FPQSC Cirebon, if there are many export destination countries, the export volume will tend to increase and if export destination countries decline, the export volume will also decrease, causing the model made is not in accordance with the calculation of R square and ANOVA because it only gets value R square value of 0.484 means that 48% of the independent variables affect the export volume of consumption fish in FQS FPQSC Cirebon to be volatile and the remaining 52% of other changes variables are not used in making the model and seen from the ANOVA value (F test) simultaneously there are no significant independent variables on the dependent variable and (T test) there is only one independent variable that is significant on the dependent variable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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