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DOI: 10.22219/jrak.v12i1.20177

Citation:

Prasetyo, W. (2022). Determinants Of Carbon Tax Implementation. *Jurnal Reviu Akuntansi Dan Keuangan*, 12(1),1-16.

Article Process

Submitted:

February 9, 2022

Reviewed:

February 11, 2022

Revised:

April 7, 2022

Accepted:

April 12, 2022

Published:

April 15, 2022

Office:

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Muhammadiyah Malang
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Jalan Raya Tlogomas 246,
Malang, East Java,
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P-ISSN: 2615-2223

E-ISSN: 2088-0685

Article Type: Research Paper

DETERMINANTS OF CARBON TAX IMPLEMENTATION

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ABSTRACT

Empirically this study examines the relationship between carbon tax implementation with several variables, namely voluntary awareness, behavior change, business performance, business size and business growth. The multiple regression model analysis is based on 52 respondents of companies in East Java that run forestry, energy and transportation businesses in Malang Raya (Malang Regency, Malang City, Batu City), Pasuruan Regency and Blitar Regency. The results showed that the implementation of the carbon tax was significantly and positively associated with voluntary awareness and business size, and significantly and negatively associated with business performance. The results of the study did not succeed in supporting the hypothesis of a relationship between the implementation of carbon taxes with behavioral changes and business growth. These results indicate that the carbon tax implementation a based on the polluters-pay principle takes place. A philosophy that reflects of carbon tax function as a sustainable activity towards being more efficient, low-carbon and environmentally friendly. Internal awareness of Taxpayer regarding carbon emission rates application or carbon pricing in the business activities carried out. The economic value of carbon that influences the realization Sustainability Report implementation.

KEYWORDS: Carbon Tax Implementation; Carbon Pricing; Polluters-pay Principle; Sustainability Report.

INTRODUCTION

The carbon tax regulated through the Harmonized Tax Regulations (HTR) Law expresses concern for the future of intergenerational justice. This scheme is intended to control climate change whose impact is a real threat to the environment and sustainability, especially to Indonesia. This is as stated Darmawati & Zelmiyanti (2021), Pratama (2021) and Shafika & Fakhroni (2020) that compared to other countries, Indonesia is one of the countries most affected by climate change based on the World Bank's 2019 report. The most vulnerable populations are those living in vulnerable areas and the poor, with an estimated 2.5 to 7.0 percent of GDP. These conditions provide activities that are considered Wardani & Susilowati (2020) as mitigation and adaptation activities to minimize the risk of climate change for the Indonesian economy. Conditions that provide opportunities and challenges through the Climate Change Fiscal Framework. The objective framework is to strengthen climate change financing strategies in public funding schemes (APBN and/or APBD) or other innovative schemes.

The above conditions refer to Kuralbayeva (2019), Alpaslan et.al (2021) and Weisse & Goldman (2021) that innovative financing practices, markets and carbon taxes based on the polluters-pay principle are implemented in many countries. This principle reflects the function of the carbon tax as an instrument of behavior (changing behavior) so that people shift their activities to a more efficient, low-carbon, and environmentally friendly direction. Further stated Alves & Afonso (2019) and Kacaribu (2021) The Nationally Determined Contribution (NDC) targets the reduction of greenhouse gas (GHG) emissions by 29 percent from Business as Usual (BaU) with their own businesses (about 834 million tons of CO₂) by 2030, and 41 percent (equivalent to 1,185 million tons of CO₂) with international support. This target is in line with the National Medium Term Development Plan (NMTDP) regarding low carbon development.

This explanation was responded by influencing the NDC document in 2021 along with submission of the Long Term Strategies for Low Carbon and Climate Resilience (LTS-LCRC) 2050. This situation is another country, Indonesia also has an agenda for achieving net zero emissions in 2060 or earlier. The process of achieving this is to achieve the target of ratifying the Carbon Economic Value (CEV) regulation. In the provisions of the CEV here it is as stated Wardani & Susilowati (2020), Kacaribu (2021) and Sologon et.al (2021) that the carbon tax as part of levy on carbon is in line with carbon market scheme. Both are expected to be able to synergize in encouraging achievement optimization all targets that have been set. As further stated in the CEV operational framework, it is regulated in Presidential Regulation Number 98 of 2021 regarding CEV. This regulation regulates carbon market schemes and carbon taxes. The carbon market shows a process that is able to maintain emissions at a certain level through an emissions trading system between actors. Furthermore, the carbon tax strengthens carbon market.

The use of economic policies in climate control is a form of internalizing these emissions into the economic system. This condition is expected to be able to control regularly and effectively to control the internalization of CO₂ emissions because it has a negative externality impact on the climate, economy and health. The carbon market mechanism is the best method of assigning value to the internalization process as a determining factor. This internalization is prices formation through the carbon market which is now being built and will be implemented. The price formed becomes the basis for determining the carbon tax rate later. Determination of the carbon tax rate at an early stage as stated Kacaribu (2021), Kuralbayeva (2019), Kate & Milionis (2019) and Weisse & Goldman (2021) that the

government set Rp. 30/kilogram CO₂ or equivalent to US\$2.1/ton CO₂. This calculation is the minimum value which will be evaluated and adjusted periodically. This change in conditions shows that the implementation of carbon taxes is closely related to the main sectors that contribute to emission reduction targets. This concern shows as statement Wardani & Susilowati (2020) and Kacaribu (2021) that the Nationally Determined Contribution (NDC) target mostly comes from the forestry and energy and transportation sectors which accounted for 97 percent of the total target. The rest is a contribution from the waste, agriculture and industry sectors (3 percent). This composition shows the priority scale of climate control efforts, including through carbon taxes.

The three sectors above, namely forestry, energy and transportation, show an important role in the implementation of the carbon tax. This is based on the statement Peralta-Alva et.al (2018) and Alpaslan et.al (2021) that the forestry sector is targeting the achievement of zero net emissions (nek sink), meaning that the forestry sector absorbs the same amount of carbon as its emissions and after 2030 the sector will experience a carbon “surplus”. Furthermore, the energy and transportation sectors until 2021 have not shown significant progress in reducing emissions. Therefore, this research focuses on these three sectors. The three sectors are the focus as stated by the Directorate General of Taxation (DGT) that the carbon tax in April 2022 will be applied to the coal energy sector with an initial rate determination Rp.30 per kilogram of CO₂ equivalent. Furthermore, the carbon tax is adjusted by taking into account the development of the carbon market, NDC targets, sector readiness and community economic conditions. Carbon tax revenues can be used for other climate change mitigation and adaptation efforts.

The attention of three sectors to control emissions in the forestry, energy and transportation sectors does not stand alone, but together with the government's long-term plan to accelerate the achievement of the Net-Zero Emissions (NZE) target. The NZE explanation as the basis for this research refers Kuralbayeva (2019) research results to indicates a target to balance efforts of the Taxpayers. This relationship shows the amount of greenhouse gas emissions produced with the number of emissions successfully eliminated. This provides an understanding that carbon taxes can take advantage of the Energy Transition Mechanism (ETM) financing scheme carried out by taxpayers. Therefore, this research focuses on taxpayer perception factors that determine of carbon tax implementation. The purpose of this study is to find empirical evidence of several factors that influence the carbon taxes implementation for forestry, energy and transportation business actors in East Java, namely Malang Raya (Malang Regency, Malang City, and Batu City), Pasuruan Regency, and Blitar Regency. Those factors are voluntary awareness, behavior change, business performance, business size and business growth. The determination of Malang Raya, Pasuruan Regency and Blitar Regency is based on the three business actors in this area responding to the carbon tax implementation (<https://news.ddtc.co.id>. 17 September 2021).

The five factors were carried out by distributing questionnaires from October 5, 2021 to January 24, 2022. This was based on the process of ratifying the carbon tax provisions. Provisions as based on the Harmonized Tax Regulations (HTR) Law as an important effort for the future of Indonesia's economic recovery that is sustainable and equitable. This condition encourages taxpayers to implement a green economy. Implementation by implementing carbon emission rates or carbon levies (carbon pricing) in business activities carried out by Taxpayers. The economic value of carbon gives to tax subjects who buy carbon-containing goods or carry out carbon-generating activities.

Activities within tax subjects relate to voluntary awareness to fulfill obligations of the carbon tax fiscal instrument (Weisse & Goldman, 2021). This is as stated Alink & Kommer (2016) and Kuralbayeva (2019) that the fiscal instrument to influence aggregate demand for the fulfillment of tax obligations. The obligation to environmental sustainability makes the carbon tax object motivation for the carbon tax validity in the HTR Law as of April 1, 2022, namely a levy on economic activities in calculating emissions. This can be a solution to the problem of emissions and tax revenue shortfalls. Conditions that provide input for the taxation policies development and research to link regulations and their implementation, as well as the development of carbon trade mechanisms. Policy relationships to determine targets and implementation mechanisms to be more targeted, and to accelerate growth in the real sector. Therefore, fiscal policy is the right target to explore tax objects according to economic conditions. Policies that work through intermediate targeting, namely aggregate demand. The request relates to Taxpayer's voluntary understanding to carry out the policies that have been set. Tax policy has a positive influence on Taxpayers to carry out the plans that have been set (Prasetyo, 2018, 2016; Mayoral & Esteban, 2019; Kate & Milionis, 2019; Famami & Norsain, 2019; Díaz-Giménez & Pijoan-Mas, 2019; Anjanni et.al 2019; Górecki & Letki, 2021).

The plan is the steps taken by the Taxpayer in making changes to tax amount reporting that must be calculated. The calculation is a fixed rate with economic implementation. The relationship between these two factors has an economic value obligation to pay for it. This aspect shows a positive influence on taxation policies aimed at increasing tax compliance (Prasetyo, 2016; Sudirjo, 2021; Alink & Kommer, 2016; Backus & Grant, 2019; Adam et.al, 2020). The tax policy as provides certainty that the imposition of taxes has a significant relationship in paying taxes as they should. Improving taxpayer compliance is a strategic priority for achieving tax revenue every year on the basis of tax determination.

The tax base expansion through the Directorate General of Taxes (DGT) policy issued with hope of increasing taxpayer compliance, both voluntary compliance and enforced compliance. Various policies aimed at expanding the tax base, namely based on the ease of calculating, paying and reporting taxes, are expected to increase awareness and compliance with paying taxes. Tax payments are positively correlated with the development of the economic environment as an effort to carry out the tax function (Prasetyo, 2018; Mayoral & Esteban, 2019; Varotsis & Katerelos, 2020). This achievement provides a positive correlation between the tax base imposition policy and Taxpayer compliance. Correlation of improving service quality in providing feedback on policies that have been established. The determination of a new tax object that responds to the economic environment makes the relationship between Taxpayer and DGT continuously conduct better evaluations, and ensures that Taxpayers receive increasingly quality, easy and appropriate services for the economic activities carried out.

Economic activity is an aspect of the policy for imposing a carbon tax as a response to justice and environmental concern (Kuralbayeva, 2019; Weisse & Goldman, 2021). This response shows the responsibility of Taxpayers who are active in the forestry, energy and transportation sectors to fulfill their carbon tax obligations. Tax policy with taxpayer awareness is an integral part to show success and positive response (enforced compliance). This is a trust (moral) to build trust. Conditions that have great power in participating voluntarily pay taxes (Jacobs, 2013; Echevarría, 2015; Varotsis & Katerelos, 2020; Damawati & Zelmianti, 2021; Shafika & Fakhroni, 2020). An explanation that forms the basis for demonstrating the hypothesis that:

H₁: Voluntary awareness positively influences carbon tax implementation

5

Tax policy trust provides the main element in strengthening and changing Taxpayer behavior in implementing (Alink & Kommer, 2016; Kuralbayeva, 2019). The Taxpayer's behavior is based on the tax function and economic conditions, meaning that the tax collection system based on the law gives Taxpayers the confidence to carry out their rights and obligations in the field of taxation. This scientific condition provides an opportunity to voluntarily calculate, pay and report taxes owed based on tax laws and regulations, namely behavior that is in accordance with the actual situation. Thus, the influence of taxation policy with behavior makes a relationship to reveal the actual actions (Peralta-Alva et.al, 2018; Kate & Milionis, 2019; Shafika & Fakhroni, 2020; Adam et.al, 2020).

The disclosure provides a combination of efforts to increase awareness and use of tax collection systems, the imposition of witnesses and tax audits as well as the use of data from various valid sources. The conditions for ensuring the correctness of tax payments, and exploring the potential of existing taxes are supported by payment ease, reporting and tax services with a reliable tax information system. This achievement is influenced by changes in the behavior of Taxpayers to policies set respond. The carbon tax policy in the three sectors of forestry, energy and transportation is a commitment of DGT to explore potential tax sources. Therefore, according to Chernick et.al (2014), Auerbach (2017), Ayuso et.al (2019), Shafika & Fakhroni (2020), Weisse & Goldman (2021) and Górecki & Letki (2021) the tax object policy, the complexity of its imposition increases, so that the very dynamic interpretation of regulations, increasingly demands the behavior of Taxpayers to development respond continue of action activities through reforming aspects of behavior optimisation in optimizing revenue.

Optimizing the behavior of paying carbon taxes according to Díaz-Giménez & Pijoan-Mas (2019), Widakdo & Ardini (2021) and Alpaslan et.al (2021) is a manifestation of optimizing and strengthening Taxpayers' taxation, so that the tax object is carried out not only for the benefit of revenue from the tax sector, but how the tax interacts with the dynamics of existing developments. Furthermore, the provision of space for changes and adjustments to the behavior of Taxpayers with the presence of a new sector, namely carbon, which will make economic activities and transactions through the production process pay attention to the environment. This relationship provides a measurable and sustainable adjustment effort, this is what drives the Directorate General of Taxes (DGT) to reform economic activity in taxation. Alink & Kommer (2016), Peralta-Alva et.al (2018) and Sologon et.al (2021) stated that the reform of economic activity includes expanding the tax base, improving tax administration, reducing tax evasion and manipulation and regulating the imposition of appropriate activities.

Activities that encourage behavior to strengthen resources in this case the Taxpayer's ability to run according to regulations. Compliance with this regulation reflects the behavior of Taxpayers with resulting economy, therefore simplification of calculations, tax rates and carbon tax payment mechanisms is highly expected. These three factors as stated Behera & Dash (2019), Varotsis & Katerelos (2020), Darmawati & Zelmianti (2021), and Sudirjo (2021) are factors of Taxpayer behavior on procedures, work procedures, discipline and mentality. With behavior that is expected to pay its obligations and avoid not knowing the existence of these regulations.

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The meaning of the behavior and regulations according to Adam et.al (2020) can be explained as the Taxpayer's lack of concern in understanding the implementation of his obligations. This situation is an activity to harmonize the relationship of values in the rules or views, and

or actions or attitudes as a series of elaborating the importance value of carbon tax. The goal is an effort to create, persevere and maintain the implementation of tax function itself. Another opinion, which agrees, states that determining policy new tax object is result of a process or effort for Taxpayers behavior to realize ideas of legal certainty, social benefits and justice into a reality (Echevarría, 2015; Bastani et.al, 2020). This basis behavior stems from improving service quality and facilitating understanding for Taxpayers in carrying out their tax obligations.

These conditions provide a relationship between obligations and rights of tax to latest tax regulations. This relationship is directly related fulfill obligation to cost calculations and effective cash management in paying taxes. The process which according to Chernick et.al (2014), Auerbach (2017), Cnossen (2018), Bauer et.al (2018), Kate & Milionis (2019), Shafika & Fakhroni (2020) and Alpaslan et.al (2021) shows a behavioral relationship with regulations in fulfilling tax obligations in accordance with potential exploration and evaluation of tax revenues. Increasing Taxpayer behavior will have implications for success of the regulations that have been set, namely the fulfillment of taxes on awareness, engagement, and compliance in fulfilling obligations and rights which can be improved.

H₂: Behavioral change positively influences carbon tax implementation

The implementation of tax regulation policy according to Jacobs (2013), Echevarría (2015), Mayoral & Esteban (2019), Darmawati & Zelmianti (2021) and Alpaslan et.al (2021) is based on the economic development of Taxpayer in a fair manner. This condition encourages sustainable business development existence of economic activity. Attention that has a positive impact on income to be received. As revealed by Adam Smith, that tax collection should pay attention to the convenience principle, namely that tax payments should be made possible when the Taxpayer is in a pleasant condition or makes it easier for Taxpayer. Furthermore, International Tax Glossary states that tax collection should be based on ability to pay principle, namely that tax collection should pay attention to ability of the population to pay taxes. On the one side, the government is in need of very large funds for the prevention of Corona Virus which can be obtained from the tax sector. However, on the other hand, economic or business conditions are weakening which is very unwise if the government has to burden the people to pay taxes continue.

The two relationships make the implementation of tax collection pay attention to condition of the Taxpayer's business performance. This business performance is an economic management that has been carried out as a business process. The process requires the Directorate General of Taxes (DGT) to always try to formulate regulations that can adopt changes in the economic structure (business) that are developing in society and do not conflict with those mandated in the Taxation Law (Fitriyani & Yusuf, 2021; Darmawati & Zelmianti, 2021; Pratama, 2021). This is what encourages DGT to continue to update legal policies that are in line with evolving business processes. The hope is to improve a conducive, attractive and competitive business climate. The consequences resulting from each taxation regulation support the Taxpayer's continue business to grow and develop. This will encourage a wider taxation base which in turn will increase tax revenue (Chernick et.al, 2014; Prasetyo, 2018; Peralta-Alva et.al, 2018; Backus & Grant (2019), Alves & Afonso, 2019; Shafika & Fakhroni, 2020, Darmawati & Zelmianti (2021).

The basis of business performance makes momentum as stated Prasetyo (2018), Behera & Dash (2019), Kuralbayeva (2019), Kate & Milionis (2019), and Varotsis & Katerelos (2020) as the relationship between economy combination, taxation policies adopted, and taxpayer compliance level in responding according to their business performance. Further

performance relates to income earned by efforts made by Taxpayer in accordance with applicable regulations. Tax provisions based on business performance according to Díaz-Giménez & Pijoan-Mas (2019), Adam et.al (2020), Wardani & Susilowati (2020), Kacaribu (2021), Sologon et.al (2021), and Górecki & Letki (2021) as the use of data from various valid sources to ensure the correctness of income and tax payments. Therefore, support for the ease of obtaining business results can improve Taxpayer compliance in responding to stipulated tax provisions, which in turn will increase national tax revenues.

The process of improving business performance above is to sharpen the detection of Taxpayers who are dishonest in reporting their taxable income. As stated Alink & Kommer (2016) and Górecki & Letki (2021) that the principle of tax reporting continues to use the self-assessment mechanism, namely that taxpayers always respond to tax regulations based on their business activities to record and report their own taxable income. That is, if the regulations are not in accordance with the business performance, the Taxpayer will not fulfill it. This relationship has consequences on production scale, market size and resulting impact. A business process that demonstrates pro-business tax policies and fiscal relaxation in accordance with the business economic environment being carried out, as well as the imposition of a carbon tax (Kuralbayeva, 2019). Therefore, business performance and regulations make a single entity in the taxation course. This condition supports the business management creation based on tax calculation process on the business results achieved, both economically (profits) and also the resulting environmental impacts (Cnossen, 2018; Bauer et.al, 2018; Mayoral & Esteban, 2019; Kuralbayeva, 2019; Alpaslan et.al, 2021).

H₃: Business performance positively influences carbon tax implementation

The implementation of tax regulations provides the use of business economic resources on data and information on tax objects. By doing so, it is hoped that it will facilitate the adjustment and supervision of tax imposed realization. This condition can be used to explore potential taxation and evaluate tax revenue. With the implementation of tax collection, it will have implications for increasing business size, meaning that taxation object has a different amount. Differences caused by business operations and tariffs charged. The relationship between tax rates and business size is stated by Sologon et.al (2021) as profit earned and low profit margins.

These two conditions serve as the basis for taxation as a result of activities based on business size. This effort to base the business size on is stated Behera & Dash (2019), Alves & Afonso (2019), Shafika & Fakhroni (2020), Varotsis & Katerelos (2020), and Sudirjo (2021) as an effort to close the tax gap in taxation regulations by optimizing the potential for tax revenue from the policy side and business actors. The policy gap from taxation policies makes consideration for evaluating regulations as a fiscal stimulus to carry out, for example carbon and digital taxes. Fiscal stimulus is a major concern of DGT in tax revenue for business activities carried out. This activity provides differences in the businesses size as small, medium and large scale businesses. The business scale provides a differentiator in the taxation of related activities, namely income and environmental impact.

The consequences of implementing tax regulations in short term will more or less affect tax revenues due to the implementation of several relaxations related to tariffs, objects, and other facilities that support competitiveness. However, in the long term, the stipulation of this provision can foster investment in increasing the business size, which in turn will improve the national economy. This has a positive effect that wider the tax base, which in turn will increase the business scale of Taxpayers, meaning that tax regulations determination is correlated with business size. The business size makes basis for taxation policies issued to be

imposed in accordance with the activities carried out (Alink & Kommer, 2016; Kate & Milonis, 2019; Mayoral & Esteban, 2019; Bastani et.al, 2020; Wardani & Susilowati, 2020; Górecki & Letki, 2021; Sologon et.al, 2021).

In terms of quantity, tax rate determination is in line with the increase in the number of Taxpayers' businesses, meaning that efforts are made to make a positive measure of the increase in the number of tax payments (Peralta-Alva et.al, 2018; Ayuso et.al, 2019; Famami, 2019; Anjanni et.al, 2019; Varotsis & Katerelos, 2020; Alpaslan et.al, 2021; Darmawati & Zelmiyanti, 2021).. The amount is based on the awareness to control, plan and organize the taxation aspects in terms of business size that can benefit the business value. This value is by continuing to carry out tax obligations in accordance with the legislation, so that efforts to carry out tax implementation legally and sustainably can be done (Kuralbayeva, 2019). Relationships that create awareness of paying taxes according to business size income for tax revenues implementation.

H₄: Business size positively influences carbon tax implementation

Tax revenue is the purpose of stipulating tax regulations implemented as a strategy to increase tax amount both results and object (Alink & Kommer, 2016). These two aspects are factors of business growth for Taxpayers who become tax subjects and are obliged to pay taxes based on their business income. Efforts to mobilize tax revenues by increasing business growth make it a real activity that must be done. Activities by increasing the object of taxation to increase the ratio of the amount of tax payable. The ratio is linked to policies to optimize tax revenue on the one hand, and maintain a sustainable business climate on the other. Establishing fiscal policy regulates measures, so that each type of tax and business sector reaches the optimum point (Alves & Afonso, 2019; Behera & Dash, 2019; Backus & Grant, 2019; Díaz-Giménez & Pijoan-Mas, 2019; Anjanni et.al 2019; Shafika & Fakhroni, 2020; Pratama, 2021).

Policies that show business growth performance continues to increase are a must to achieve. Statement Jacobs (2013), Auerbach (2017), Bauer et.al (2018) and Mayoral & Esteban (2019) that business development is tax revenue as a mutually influential relationship. Increasing the value of potential targets and implementation effectiveness of business sector activities in tax regulations implementation. Therefore, the performance of tax revenue responds to changes in policies and reforms carried out for the business growth achieved. Growth is the main focus of tax regulations so that Taxpayers can understand well so as not to cause concern for business actors.

The condition of concern is production result of Taxpayers business growth. This correlation is as the result of research Cnossen (2018) and Ayuso et.al (2019) that growing development of production activities makes the amount details of tax imposition increase. Increased yields and costs that have an impact on earned income activities. Developments that show that the business growth of Taxpayers has an impact on tax amount and tax object imposed. The explanation for the positive link between the provisions of tax regulations and business growth refers to research results Bauer et.al (2018), Díaz-Giménez & Pijoan-Mas (2019) and Alpaslan et.al (2021).

H₅: Business growth positively influences carbon tax implementation

METHOD

Determination of dependent variable is the carbon tax implementation that is responded to by forestry, energy and transportation business actors in Malang Raya as many as 15 (Malang Regency, Malang City, and Batu City), Pasuruan Regency as many as 21, and Blitar Regency

as many as 19. Forestry, energy and tourism business actors transportation was used as the study population, with purposive random sampling of the sample. Research data were collected through questionnaires with contact and e-mail. 55 questionnaires were sent to the three business actors, and 52 were responded to. Independent variables are the variables or factors that determine the carbon tax implementation. These factors are voluntary awareness, behavior change, business performance, business size and business growth. The data for the carbon tax implementation are based on the research results Kuralbayeva (2019) and Weisse & Goldman (2021). While the data on voluntary awareness, behavior change, business performance, business size and business growth were obtained from the development of various journals as well as the hypothesis formulation. Variable measurements are as follows:

- The variable of the carbon tax implementation in this study is a behavioral instrument (changing behavior) in diverting its activities to a more efficient, low-carbon, and environmental sustainability direction. The carbon tax implementation variable was measured using a self-rating instrument developed by Kuralbayeva (2019) and Weisse & Goldman (2021). In this study, each respondent was asked to measure their own performance compared to before the carbon tax implementation, by choosing a scale of one to ten. The implementation of the carbon tax is measured covering eight dimensions: planning, investigation, coordination, evaluation, efficiency, low carbon, environmental sustainability and one dimension of measurement is carried out as a whole. The scale consists of points (1) for below average performance (low) and points (10) for above average performance (high).
- Voluntary awareness in this study was measured by including the main elements of voluntary awareness, namely process orientation, human element, environmental culture, each item of the questionnaire as a development of Kuralbayeva (2019), where respondents were asked to indicate whether they agreed with the statement. This means that each voluntary awareness is included in the carbon tax activity, from strongly disagree (point 1) means low awareness to strongly agree (point 10) means high awareness.
- Changes in Taxpayers behavior which is meant here is to increase awareness, engagement, and compliance in tax activities. This variable was measured with the instruments used by Alink & Kommer (2016), Alpaslan et.al (2021) and developed by researchers using a low scale (1) to indicate low behavior and a high scale (10) to indicate high behavioral measurements.
- Business performance, namely providing information return on business the benefits of carbon tax implementing for business activities as a polluters-pay principle. This variable was measured by the instrument used by Kuralbayeva, (2019), Alpaslan et.al (2021) and was developed by researchers using a low scale (1) to indicate low results and a high scale (10) to indicate high results.
- The business size referred to in this study is the net sales themselves accumulated from the reduction of gross sales results with costs in optimizing the carbon tax implementation. This variable was measured by the instrument used by Alink & Kommer (2016), Kuralbayeva, (2019) and developed by the researcher. This variable is measured with a scale of 10.
- Business growth in this study is measured by the average growth in policies to optimize tax revenue on the one part, and maintain a sustainable business climate on the other. The questionnaire uses a 10-point scale which is the business growth instrument development used by Alink & Kommer (2016). Respondents were asked to indicate whether they agree with the statement that the paying policy attention to carbon taxes can be included in their

business growth, from strongly disagree (point 1) means low business growth to strongly agree (point 10) means high business growth.

The statistical method used to hypothesis test is multiple regression models with dependent variable on the carbon tax implementation, and independent variables on the determinants of carbon tax implementation. The multiple regression model is as follows:

$$\text{CARBON}_i : a_0 + b_1\text{VOLUNTARY}_i + b_2\text{BEHAVIOUR}_i + b_3\text{EBIT}_i + b_4\text{SALES}_i + b_5\text{GROWTH}_i + e_i$$

Where:

CARBON	: Carbon tax implementation
VOLUNTARY	: Voluntary awareness
BEHAVIOUR	: Changes in Taxpayers behavior
EBIT	: Return on business
SALES	: Net sales
GROWTH	: Average growth
a_0	: Konstanta
b_1 - b_5	: Koefisien regresi

The independent variable effect on dependent variable was tested with a significance level of 0.05. If b_1 is positive ($b_1 > 0$) and the probability is significant ($\rho < 0.05$) it means that there is a direct influence between voluntary awareness on the carbon taxes implementation, and if $b_{2,3,4,5}$ is positive ($b_2, b_3, b_4, b_5 > 0$) and the probability is significant ($\rho < 0.05$) for the interaction of changes in Taxpayers behavior (H_2), returns on business (H_3), net sales (H_4) and average growth (H_5), show that the hypothesis is supported or means that the variables of changes in taxpayers behavior, returns on business, net sales and average growth have an effect on the carbon tax implementation.

RESULTS AND DISCUSSIONS

The results of the voluntary awareness instrument measurement with a theoretical range between 12 - 120 and the actual range between 68 to 115 with a mean value of 96.23 and a median value of 91.2 which means that the mean is higher than median value, this indicates that the voluntary awareness in this study is quite high, while the comparison between actual range and theoretical range shows that there are no respondents' answers at the extreme (low or high) points.

Instrument changes in Taxpayers behavior with a theoretical range between 8 - 80 and the actual range of 47-78, a mean of 66.21 and a median value of 68.5, which means a mean lower than median value indicates that the research instrument is moderate, and the comparison between actual range and theoretical range shows that there is no respondent's answer at the extreme point. The same thing also applies to return on business, which shows a theoretical range between 8 - 80, a actual range is 42-72, a mean is 66.29, and a median value is 62.7, this means that in research the return on business instrument is moderate, while the comparison between actual range and theoretical range shows that there are no respondents' answers at the extreme point.

Research variables description uses results of descriptive statistical analysis as in Table 1 below:

11

Variables	Mean	Standard Deviation	Median	Actual Range	Theoretical Range
Voluntary awareness	96.23	10.66	91.2	68 – 115	12 – 120
Changes in Taxpayers behavior	66.21	7.89	68.5	47 – 78	8 – 80
Return on business	66.29	7.91	62.7	42 – 72	8 – 80
Net sales	23.51	4.02	20.2	12 – 29	3 – 30
Average growth	62.24	5.85	60	38 – 72	8 – 80
Carbon tax implementation	63.89	6.88	64	52 – 77	8 – 80

Table 1.
Descriptive Statistics Summary to Research Data

Net sales instrument with a theoretical range between 3 - 30 and a actual range of 12 – 29, a mean of 23.51, the median value of 20.2, which means the mean is higher than the median value. This means that the net sales in this study are quite high, while the comparison of the actual range with the theoretical range shows that there are no respondents' answers at the extreme point. Then the average growth instrument with a theoretical range between 8 – 80 and a actual range of 38 to 72 with a mean of 62.24, the median value is 60 which means the mean is higher than the median value, this shows that the research instrument is quite high, and the comparison between actual range and theoretical range shows that there are no respondents' answers at the extreme point.

Carbon tax implementation instrument with a theoretical range between 8 – 80 and a actual range of 52 – 77, a mean of 63.89, and a median value of 64 which means the mean value is lower than the median value, this shows that the carbon tax implementation in the study is moderate, and a comparison between actual range and theoretical range shows that there are no respondents' answers at the extreme point.

Further results of multiple regression analysis are shown in Table 2 below:

Variables Test	Beta	t-value	Sig.
Konstanta	6.154	11.699	0.000
VOLUNTARY	0.291	3.036	0.005
BEHAVIOUR	3.653E-02	0.628	0.535
EBIT	0.897	3.772	0.001
SALES	0.178	4.169	0.000
GROWTH	1.127E-02	1.248	0.219
R-square	: 0.416		
Adjusted R-square	: 0.353		
F-value	: 6.535		
Significance	: 0.000		

Table 2.
Regression Results

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Based on the R-square, F-value and significance value which is less than 1 percent, it means that the overall model can explain the dependent variable (carbon tax implementation).

Furthermore, for each coefficient, constant, VOLUNTARY, EBIT, and SALES statistically significant at the 1% level. This means that Hypotheses 1, 3 and 4 have been successfully proven, which means that voluntary awareness, business performance, and business size are related to the carbon tax implementation (Kuralbayeva, 2019; Varotsis & Katerelos, 2020; Wardani & Susilowati, 2020; Weisse & Goldman, 2021). While the BEHAVIOUR and GROWTH coefficients are not statistically significant. This means that hypotheses 2 and 5 have not been proven, which means that the carbon tax implementation is not associated with changes in behavior and business growth (Alpaslan et.al, 2021; Darmawati & Zelmiyanti, 2021; Górecki & Letki, 2021). In addition to considering the statistical significance in evaluating the estimated equation, it is also necessary to consider whether it has fulfilled assumptions underlying the regression. Assumptions are also related to the overall model which includes multicollinearity, homoscedasticity, residual independence, and normality.

Residual independence test is intended to determine whether there is autocorrelation between residuals or not. This test was carried out using the Durbin-Watson test. If the D-W value is between d_u and $4-d_d$, it means that there is no autocorrelation. The test results show that the DW value is 1.916. With 52 samples and 5 independent variables, it is known that the value of $d_l = 1.34$ and the value of $d_u = 1.77$. Thus, the DW value is between d_u and $4-d_d$, which means that there is no autocorrelation. The multicollinearity impact (there is a correlation between independent variables) also needs to be considered. To test it can be seen through the value of tolerance and Variance Inflation Factor (VIF). A high tolerance value indicates little collinearity. The VIF value is the opposite of the tolerance value, so a small VIF value indicates a low intercorrelation between the independent variables. As shown in Table 3, there is no VIF value that exceeds 10, and the tolerance value indicates that collinearity does not explain more than 10% of the independent variable variance. Multicollinearity test can also be done by testing the condition index. In the condition index that exceeds 30, there are two variables whose proportion of variance is more than 0.90. The coefficients are VOLUNTARY on dimension 5 and SALES on dimension 6. So in each dimension there is only one related value, meaning that there is no collinearity shown in this variable.

Variable	Tolerance	VIF
VOLUNTARY	0.355	2.817
BEHAVIOUR	0.803	1.247
EBIT	0.366	2.737
SALES	0.881	1.138
GROWTH	0.929	1.078

Table 3.
Multicollinearity Test Results

The results of this study indicate that empirically, the carbon taxes implementation is significantly and positively related to voluntary awareness and business size. This is in line with Kuralbayeva (2019) and Weisse & Goldman (2021). that the higher the awareness and income generated by an entity, the more successful the carbon tax implementation will be for business actors. A response that proves that the carbon tax regulated through the Harmonized Tax Regulations (HTR) Law is based on the polluters-pay principle, which truly reflects the carbon tax function as an awareness instrument so that people shift their activities

to a more efficient, low-carbon and environmentally friendly direction. In addition, the results also show that the carbon tax implementation has a negative and significant relationship with business performance (EBIT). This means that the higher the business performance that can be achieved by the company, the lower the implementation of the carbon tax that can be given by the company because of a sustainable understanding of the provisions of the Carbon Economic Value (CEV) regulated in Presidential Regulation No. 98 of 2021 as the operational framework of CEV, meaning the higher the performance the effort that the company can achieve, the lower of carbon tax implementation. This study failed to prove that the implementation of a carbon tax as an effort to support the Fiscal Framework for Climate Change is also related to behavioral change and business growth.

The results of this study successfully support research results conducted by Kuralbayeva (2019), Varotsis & Katerelos (2020), Darmawati & Zelmianti (2021), Weisse & Goldman (2021) and Sudirjo (2021). They states that the implementation of tax policy regulations is related to Taxpayers awareness in use of tax policies as a form of awareness that must be met. This study also supports the research results Jacobs (2013), Echevarría (2015), Alink & Kommer (2016), Prasetyo (2016), Backus & Grant (2019), Adam et.al (2020), Shafika & Fakhroni (2020), Mayoral & Esteban (2019) Wardani & Susilowati (2020), Kate & Milionis (2019), Pratama (2021) and Górecki & Letki (2021) which shows the relationship between tax regulations implementation and busines size. The measure which is a proxy for business activities with regard to the environment as a responsibility for business continuity, is consistent with the results of the research Díaz-Giménez & Pijoan-Mas (2019), Alves & Afonso (2019), and Bastani et.al (2020). The results of this study are also consistent with the evidence obtained Cnossen (2018), Bauer et.al (2018), Anjanni et.al (2019), Behera & Dash (2019), Shafika & Fakhroni (2020), Darmawati & Zelmianti (2021), and Alpaslan et.al (2021). They stated that proves the existence of a relationship between the tax policies implementation and business performance as a manifestation of the company's income activities.

This study did not succeed in supporting the research results Chernick et.al (2014), Alink & Kommer (2016), Auerbach (2017), Prasetyo (2018), Kate & Milionis (2019), Fitriyani & Yusuf (2021). They states that there is a relationship between the tax regulation policies implementation and behavioral Taxpayers response of, which some research results state as successful results of understanding regulations in convincing Taxpayers . The results of the study are also inconsistent with research results Peralta-Alva et.al (2018), Anjanni et.al (2019), Behera & Dash (2019), Backus & Grant (2019) and Sudirjo (2021) which has a relationship formulation between the tax regulations implementation and business growth.

CONCLUSION

This study attempts to examine the factors that determine of carbon tax implementation in 52 forestry, energy and transportation business actors in East Java, namely Malang Raya (Malang Regency, Malang City, and Batu City), Pasuruan Regency, and Blitar Regency. Empirically this study shows that the regulation of carbon taxation is significantly and positively associated with voluntary awareness and business size, and significantly and negatively associated with business performance. The results of the study failed to support the hypothesis of a relationship between the implementation of carbon taxes with behavioral changes and business growth. Therefore, the limitation of this research is that understanding the carbon tax implementation is a real green economy policy. Policy as an instrument of behavior in contributing to more efficient, low carbon and environmentally friendly business activities. This scheme makes intergenerational justice and controls climate change whose

impact is a real threat to the world and especially Indonesia. As in line with the polluters-pay principle, which reflects the carbon tax function on negative impacts environmental sustainability, namely natural resource depletion, pollution and environmental damage.

This function reflects as behavior instrument (changing behavior) so that people shift their activities to a more efficient, low-carbon, and environmentally friendly direction. Further research should use a larger sample and company implementation data based on the focus of business activities on emission reduction. This is based on the Carbon Economic Value (CEV) that carbon taxes as part of levies on carbon are in line with carbon market schemes. Future research is also expected to consider several determinants of the implementation of other carbon tax regulations, such as commitment of business actors, business strategies, and existence of sustainability reports. Research can also be done for a particular industry.

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