

Product Innovation, Process Innovation, and Tax Avoidance in Manufacturing Firms in Indonesia

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This research is conducted on manufacturing firms listed on the Indonesia Stock Exchange between 2014 and 2016 to examine the impact of product and process innovation on tax avoidance in Indonesia. To test the research hypothesis, we used multiple linear regression through SPSS 20.0 software. This study shows that the efforts of firms to improve the existing production processes in operating activities encourages management to avoid tax. The results of this study are expected to contribute to the development of literature relating to factors that influence tax avoidance and can be used as a foothold in making government policies related to taxation.

Key words: *Product innovation, process innovation, tax avoidance.*

Introduction

Firms seek to minimize tax paid to the state because firms consider tax as an expense that will reduce their profits (Suandy, 2011). Higher tax payments make taxpayers take up legal practises of tax avoidance (Chen et al., 2010; Tandean and Winnie, 2016). Tax avoidance is defined as one of the legal reduction efforts which is carried out by utilizing tax regulations optimally (Frank et al., 2009). Tax avoidance efforts are executed by firms through existing regulatory loopholes without violating the applicable tax laws.

Based on agency theory, tax avoidance can also be seen as opportunistic actions of management to the owner. Tax avoidance efforts are driven by declining profits which result in managers losing the potential opportunity to get more benefits from their performance. Firms that are active in product innovation will increase their operating expenses. The huge expenses of research and development will encourage firm managers to make efforts to avoid tax.

Research conducted by Howitt et al. (2005) provides empirical evidence that product innovation influences tax avoidance. Firms with good product innovation will endeavour to encourage opportunistic behaviour in management, such as tax avoidance. This is caused by an increase in expenses from product innovation activities undertaken by firms. Muhammad (2012) found empirical evidence that firms with business strategies which prioritize product innovation will continue to strive for tax avoidance. This is caused by an additional expense on the firm's operations from product innovation and, as such, tax avoidance efforts will continue. However, firms with high product innovation still try to maintain transparency to stakeholders so tax avoidance is not influenced by firms that innovate products.

Aside from product innovation, process innovation is one of the keys to improve a firm's performance (Hariyati, Tjahjadi, and Soewarno, 2019). Based on stakeholder theory, firms are obligated to provide prosperity to all stakeholders through the executed activities. They must strive to get support from stakeholders through innovative efforts that give many benefits to stakeholders (Gray et al., 1997). The creation of new products must be accompanied by correct and efficient use of technologies, which is usually defined as process innovation. The costs incurred from repairs, maintenance, and additions to machinery will have an impact on the firms' decreasing profits. The effort to innovate processes by maintaining, repairing, and adding new machines encourages firm managers to take accounting actions to improve their firm's performance. One of these accounting actions is tax avoidance.

Research conducted by McGuire (2012) provides empirical evidence that firms with good process innovation will avoid efforts to minimize corporate tax expense. This is because firms that minimize operational expenses in the production process are more able to pay tax. Thomas (2005) also provides empirical evidence that process innovation has no effect on tax avoidance. Thomas (2005) found that firms which are more efficient in the production process do not always generate higher profits as profits are generated through efforts to increase sales volume. As such, business process efficiency does not have a strong impact on increasing profits. This leads to the weak impact of process innovation on tax avoidance.

This research is expected to contribute to the development of literature related to factors affecting tax avoidance and can be used as a foothold in tax-related government policy making. The firms used as a sample for this study are manufacturing firms listed on the Indonesia Stock Exchange (IDX) between 2014 and 2016. We used manufacturing firms as the sample because manufacturing is one of the sectors that demand high product and process development due to high competition. 2014 to 2016 were selected as the observation years due to the existence of free trade in the Southeast Asian region (AEC), which encourages firms to innovate either products or process. In addition, between 2014 and 2016, there was a

significant decrease in the tax ratio, with a high unexplored tax potential due to the tendency of firms to avoid tax.

This paper will continue with the following arrangement: literature review; description of variables and samples, as well as research models; the results of empirical analysis and hypothesis testing; and a summary or conclusion of the research, including suggestions for further research.

Literature Review and Hypothesis Development

Literature Review

The enactment of the AEC (ASEAN Economic Community) in 2015 created challenges for firms in Indonesia wanting to seize market opportunities in an increasingly competitive business environment. Firms are required to meet the needs of stakeholders while preserving themselves. In addition, firms need to be able to develop in order to compete with other firms and achieve a competitive advantage.

The increasing competitive scope of global competition requires firms to acquire unique and scarce resources that are not owned by competitors. Unique resources are expected to produce a product or process that cannot be copied by competitors, resulting in an increase in the quality of the produced products and processes by firms. This results in the improvement of a firm's performance, as well as providing benefits to increase the wealth of stakeholders.

Innovation is a strategy that is used to find, develop, and implement new ideas related to the development of processes, technology, and products (Slater and Olson, 2001; Narsa, 2019). Continuous innovation can produce alternatives for firms in determining the priority of competitive strategies – not only prioritizing cost leadership, but also quality leadership, delivery, and responsiveness (Means and Faulkner, 2000).

According to the Oslo Manual (OECD, 2005), innovation is categorized into four types, which are product innovation, process innovation, marketing innovation, and organizational innovation. This study focused on product innovation and process innovation because only these two innovations are based on internal resources owned by firms. Product innovation is the introduction of new goods or services, or a significant development in the intended characteristics or uses of existing goods and services, which includes significant improvements in technical specifications and components, as well as materials, ease of use and other functional characteristics (OECD, 2005).

Product innovation is executed by utilizing new knowledge and technology or the combination of existing knowledge with existing technology. Product innovation is a difficult

process and requires sophisticated technology, change of customer needs, shortened product life cycles, and an increase in global competition. To become successful, they must have strong interactions within firms and also between firms, as well as with their customers and suppliers (Akova et al., 1998). Fagerberg et al. (2004) emphasized that the introduction of new products generally has clarity and a positive effect on revenue growth as the nature of cutting production costs.

Process innovation is a new implementation or a significant increase in the production of products or shipping methods. This also includes a significant change in the production techniques, equipment and / or software used by firms. Process innovation can be adopted to reduce unit production or shipping costs, improve quality, increase production significantly, and develop new products (OECD, 2005).

Innovations adopted by firms are executed to improve long-term performance. Innovation is important as it develops a firm's business processes and can become a weapon that will ensure the firm's sustainability. Good innovation will produce a qualified product and service at low cost, and will invent products with new attributes, as well as products that are different and unique. The effort of firms to innovate will have a direct impact on their profits and an indirect effect on corporate tax. Good management of innovation will ultimately have an impact on a firm's tax expense. This is caused by an increase in financial performance due to adopted innovations (Howitt et al., 2005).

Hypothesis Development

The Effect of Product Innovation on Tax Avoidance

Firms that are active in product innovation will increase their operating expenses. This will have an impact on their declining performance. To assure shareholders of the firm's ability to improve their performance, product innovation can become a way for managers to avoid tax. The huge expenses of research and development will encourage managers to make greater efforts in tax avoidance. This is due to the effort of managers to satisfy shareholders as well as themselves. Research conducted by Howitt et al. (2005) provides empirical evidence that product innovation influences tax avoidance. Firms with good product innovation will encourage opportunistic behaviour management efforts, such as tax avoidance.

H1: Product innovation affects tax avoidance.

The Effect of Process Innovation on Tax Avoidance

The costs incurred from repairs, maintenance, and additions will have an impact on firms' decreasing profits. The effort to innovate and improve processes by maintaining, repairing,

and adding new machines will encourage firms' managers to take accounting actions to improve firms' performance. One of these accounting actions is tax avoidance. Research conducted by McGuire (2012) provides empirical evidence that firms with good process innovation will avoid efforts to minimize corporate tax expense. This is because firms that minimize their operational expenses in the production process are more able to pay tax.

H2: Process innovation affects tax avoidance.

Research Methodology

Type and Source of Data

This research is quantitative with an explanatory approach. An explanatory approach is a research approach that determines the influence of variables through hypothesis testing (Sugiyono, 2012). In addition, this research is a form of confirmatory research. Confirmatory research is a study that focuses the confirmation of a theory which is tested on an object either by explanation or prediction (Sugiyono, 2012). The data used in this research was secondary data; more specifically, we used audited financial statements of manufacturing firms listed on the Indonesia Stock Exchange (IDX) between 2014 and 2016.

Definition of Operational Variables

Product Innovation

Product innovation is an effort to create new products which results from research and development (Akova et al., 1998). Similarly, the Oslo Manual (OECD, 2005) argues that product innovation is the introduction of new goods and services or significant product improvements. This includes significant development in technical specifications, and components, as well as materials, software combinations, and other functional characteristics. Product innovation can utilize new knowledge and technology or the combination of existing knowledge with existing technology.

The huge expenses of research and development are expected to increase the creation of new products. The effort of firms to increase research and development activities raise the suspicion that they are trying to increase their operating expenses in order to reduce their profits and taxes paid to the state.

$$PRODUCT\ INNOVATION = \frac{\text{Research and Development Expenses}}{\text{Total Assets}}$$

Process Innovation

Process innovation is a new implementation or a significant increase in production of products. Process innovation is executed by making significant changes in production techniques, equipment and / or software used (OECD, 2005). The effort of firms to be more aggressive in making improvements in existing production techniques, equipment, and software, has led to an allegation that management tries to reduce the profits generated by firms to reduce the liable tax. This research measures process innovation by using the PROCESS ratio which has the following formula:

$$PROCESS\ INNOVATION = \frac{\text{Expenses (Repairment + IT + Machine)}}{\text{Total Assets}}$$

Tax Avoidance

Through the Directorate General of Taxes (DGT), the government always strives to revise tax regulations to increase tax revenue. On the other hand, firms seek to minimize tax payments, which can be done legally (tax avoidance) and illegally (tax evasion). The assumption of tax as an expense will affect profit margin, while the assumption of tax as a profit distribution will affect the rate of return on investment. Economically, tax is a reduction element of profit which is available for distribution or reinvestment by firms (Suandy, 2011).

Tax avoidance in this study refers to the definition used by Frank et al. (2009) which is defined as the effort of management in managing taxable income through a series of tax planning management actions legally, illegally, or between legal and illegal.

$$CETR = \frac{\text{Current Tax Expense}}{\text{Total Assets}}$$

Where:

CETR: Amount of corporate tax paid by firms during the year.

Current Tax Expense: Amount of current corporate tax in the year based on financial statements of firms.

Pre –Tax Income: Income before tax in the year based on financial statements of firms.

Results and Discussion

Descriptive Statistics

A total of 69 manufacturing firms were used as a sample in this study. Descriptive statistics are statistics that are used to analyse data by describing or evaluating collected data without generating a summary that is applicable for public or generalization (Anshori and Iswati, 2009).

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CETR	184	.000000	.672166	.23963138	.117153517
PRODUCT	184	.000000	.029204	.00080603	.002582386
PROCESS	184	.000000	6.591939	.63115653	.731673949
Valid N (listwise)	184				

Normality Test

To test whether the residual data in the constructed regression model are normally distributed, a normality test is applied (Ghozali, 2006; Tai-Chi & Frank 2017). The normality test is conducted by using a non-parametric statistical approach with the Kolmogorov-Smirnov (K-S) method. If the probability (asymp.Sig) > 0.05, H₀ will be accepted, which means that the residual data is normally distributed.

Table 2: Results of Normality Test

N	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Kesimpulan
184	1,271	0,079	Normal

Multicollinearity Test

Multicollinearity tests are conducted to test the correlation between independent or independent variables in the regression model (Ghozali, 2013). A good regression model should not show a correlation between independent variables. The multicollinearity test is performed by analysing the value of tolerance or the value of the Variance Inflation Factor (VIF). Multicollinearity occurs if the tolerance value is greater than 0.10 or the VIF value is smaller than 10. The results of the multicollinearity test are shown in Table 3 below:

Table 3: Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	PRODUCT	.995	1.005
	PROCESS	.995	1.005

Heteroscedasticity Test

Heteroscedasticity tests are conducted to test the variable inequality from the residuals of one observation to another in the regression model (Ghozali, 2013). If the variable is constant, it can be inferred that the observational data is homoscedastic and if there is a difference, it can be taken to be heteroscedastic. A well-defined regression model shows homoscedasticity. This study uses the Glejser test to prove the absence of heteroscedasticity. If the calculated significance value for each variable in the Glejser test is greater than 0.05, the regression model does not have a heteroscedasticity problem. The results of the Glejser test which analyse the problem of heteroscedasticity are shown in Table 4.

Table 4: Results of Heteroscedasticity Tests

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	.082	.008		10.326	.000
	PRODUCT	.123	2.300	.004	.054	.957
	PROCESS	.003	.008	.031	.415	.679

Multiple Linear Regression

Multiple linear regression analysis was conducted to test the effect of independent variables, which are product innovation and process innovation, on tax avoidance. The results of multiple linear regression are shown in Table 5.

Table 5: Results of Multiple Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	(Constant)	.251	.012		21.683	.000		
	PRODUCT	.888	3.355	.020	.265	.792	.995	1.005

	PROCESS	-.020	.012	-.124	-1.677	.095	.995	1.005
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$$\text{CETR} = 0,251 + 0,888 \text{ PRODUCT} - 0,020 \text{ PROCESS} + 0,116$$

Determination Coefficient Test Results

The magnitude of influence of the independent variable on non-performing loan risk variables can be shown from the result of the coefficient of determination test. The coefficient of determination test analyses the basis of the adjusted R² value generated from the constructed regression model. Table 6 presents the test results of the coefficient of determination derived from the regression model constructed in this study.

Table 6: Determination Coefficient Test

Model	Adjusted R Square
1	0,005

The Effect of Product Innovation on Tax Avoidance

Hypothesis 1 (H1) posited that product innovation influences tax avoidance. The results above showed that product innovation is confirmed to have a positive effect on tax avoidance, which is insignificant, as indicated by the calculated significance value (0.792) > significant level (0.1).

The results reveal that product innovation does not encourage firm management to take tax avoidance measures. Research and development involve great costs, and the existence of these expenses can only be perceived in the future. The expenses incurred by firms conducting research and development for product innovation do not have an impact on their efforts to avoid tax. Product innovation is an effort by a firm's management to meet the expectations of stakeholders. Therefore, the extent of product innovation executed by firms does not have an impact on a firm's efforts to avoid tax.

Effect of Process Innovation on Tax Avoidance

Hypothesis 2 (H2) posited that process innovation influences tax avoidance. The results above showed that process innovation is confirmed to have a negative effect on tax avoidance. This is indicated by the calculated significance value (0.068) < significant level (0.1). The results of this study indicate that a firm's efforts to improve the existing production process in operating activities will encourage management to avoid tax. Process innovation which is accomplished by adding new machines and improving machines will lead to more efficient production processes and a higher volume of produced products since this is their effort to improve their performance. However, the addition of new machines, as well as



maintenance and repairs, can allow firms' managers to commit opportunistic behaviour and increase the benefits for themselves. Process innovation can become a chance for managers to minimize their tax expenses in order to increase their profits. The complexity of calculations in estimating expenses of maintenance and repairs, as well as addition of new machines, provide opportunities for managers to gain benefits for themselves through tax avoidance.

Conclusion

Based on the discussion above, the following conclusions can be drawn:

1. The above analysis shows that product innovation has a positive effect on tax avoidance but only insignificantly. Product innovation by firms does not encourage management to take tax avoidance measures. The expenses incurred by firms in conducting research and development for product innovation do not have an impact on a firm's efforts to avoid tax.
2. The analysis above shows that process innovation has a significant negative effect on tax avoidance. Therefore, process innovation can allow firms' managers to minimize the tax expenses paid in order to increase their profits. The complexity of calculations involved in estimating expenses of maintenance and repairs, as well as addition of new machines, give opportunities for managers to gain benefits for themselves through tax avoidance.

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