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The Firm Life Cycle Dynamics of Tax Avoidance

Yenni Mangoting
Tax Accounting Department
Petra Christian University
Surabaya, East Java, Indonesia
yenni@petra.ac.id

Claudia Tysia Onggara
Tax Accounting Department
Petra Christian University
Surabaya, East Java, Indonesia
claudiaongga@gmail.com

***Abstract*—This paper aimed at finding out whether tax avoidance differed across firm life cycle (FLC). We used cash flows pattern as a proxy to identify FLC into 4 phases, namely introduction, growth, mature, and decline. Tax avoidance was measured using effective tax rate (ETR) to show the impact of this practice on net income. Each FLC phase had different characteristics and hence explained its dynamics to implement tax avoidance in every stage. As a part of firms' important strategy, tax avoidance decision would consider resource allocation across FLC phases. We constructed a dataset of Indonesia publicly listed manufacturing firms which were classified as basic industries and chemicals sectors. We used a final sample of 56 companies with an 8-year research period and found that tax avoidance practice varied along FLC phases. Based on the 448 firm-year observations, this study found that firms significantly positively engaged with tax avoidance in introduction and decline stages while significantly negatively engaged in growth and mature stages. These results indicate the extent of FLC phases in explaining firms' tendency to be involved in tax avoidance and thus useful for predicting current and future potential tax.**

Keywords—Firm life cycle, tax avoidance, cash flows pattern, effective tax rate, resource based theory

I. INTRODUCTION

Business strategy can be linked with firm life cycle (FLC). A firm's business strategy based on its life cycle phases started from the introduction, followed by growth, mature, shake-out, and ended with decline phase [1]. The existence of a linkage between FLC and capital structure selection strategy has been explained previously [2]. Firms' environment which concerns about innovation development and initial investment during introduction stage leads them to record negative cash flows [3]. At the time firms confront the first stage of its FLC, they mostly rely their capital structure on debt. This strategic decision is based on the consideration of the great research and development expense together with the lack of investor's confidence about firms' going concern at this introduction stage. FLC also related to risk level and investment sensitivity [4]. In the mature stage, firms tend to have more predictable cash flows pattern and risk [5]. Firms reach their calmest and most stable position among the other FLC phases as they enter the mature stage of its cycle.

The total amount of tax paid effectivity also appeals to take firms' attention in choosing the best strategy at every phase of their life cycle. Tax was described as a significant factor of a firm's cash outflows [6]. The amount of tax paid also takes a big portion of a firm's distributable earnings. Therefore, the significant role of tax makes firms take a step to create tax avoidance strategy. Firms that perform prospector strategy have high ETR value, meaning they make use of innovation and creativity strategy to carry out tax avoidance practice [7]. Again, the option to pick different capital structure model offered by each FLC phase direct firms to some levels of tax avoidance [8]. Being in the introduction stage makes a firm going through a liquidity problem. Firms will pay attention to make high investments and hence provoke them to suffer negative cash flows. They need a source of external financing by accessing debt to overcome this problem in the introduction stage. The greater the leverage value, the higher the interest expense created from its debt amount, and thus generates a decreased in the income tax expense as interest expense is included in tax-deductible expense list. A high leverage ratio affected a decrease in a firm's cash effective tax rate value [9].

The influence of FLC on tax avoidance in this research will be explained by the Resource Based Theory (RBT) [10]. This theory describes factors reasoning firms in making a judgment to run their competitive advantage strategy and to make a strategic decision, which one of the main focus is the consideration of resource availability and allocation. A different strategic decision that a firm adopts to gain a competitive advantage in every FLC stage will consider resource availability that is possessed. This process produces the likelihood of firms to be associated with tax avoidance across FLC. Also, phase characteristic differences, e.g., cash flows pattern, capital structure option, and investment decision, that are attached in FLC shall increase a firm's dynamic behavior of constructing tax avoidance strategy [11].

This paper's purpose is to examine the degree of FLC in affecting tax avoidance activity that is done by Indonesia manufacturing firms which are categorized as primary industry and pharmacy sector during 2009 – 2016. Cash flows pattern will represent the stages that firms face. The usage of the cash flows pattern as FLC proxy is more reliable in depicting firms' life cycle phases. Cash flows pattern gives a comprehensive representation of a firm's cycle stages rather than using growth

rate, size, or age as a proxy. The phases dynamics of implementing the business strategy in FLC will influence the tax avoidance intensity. This paper will also observe the most intense tax avoidance practice across FLC phases.

II. Literature Review and Hypothesis

A. Firm Life Cycle

Firm life cycle (FLC) is a concept where a firm doesn't continuously live in a static environment. Fierce and competitive surroundings move firms' position from one cycle to another within their life cycle. Every life cycle difference has a different business strategy [12]. The distinction of capital structure, marketing strategy, production strategy, risk level, portfolio diversification investment model, and cash flows at all times distinguish one firm's cycle phase with the others.

1) Introduction Stage

In the introduction stage, firms are remarkable with the uncertainty of revenue as well as expense. This is due to firms' condition that is still in the start-up phase, and therefore require a lot sum of resource for initial financing investments and capital costs. A firm suffers from negative cash flows under this circumstance [13]. Management pays attention to possess market share at this point.

2) Growth Stage

In the growth stage, customers start recognizing the company's existence. Firm's product is starting to be traded in the market, and hence creates sales for the entity. Soaring sales in this stage recover the firm's cash flow from its previous negative value to positive value [14]. Capital adequacy through this phase reduces the firm's investment uncertainty [15].

3) Mature Stage

In the mature stage, firms are triggered to put their best effort on efficiency. Sales still keep on increasing but with a declining rate as customers start to reduce their purchase. The market has been loaded with many substitutive products and thus making the business environment competitive. The growing up contributions of firm age and size bring firms to enter their mature stage [1].

4) Shake-out Stage

In the shake-out stage, firms experience continual declining sales. Besides, firms face turbulence in their business operation. To seize back their position, firms are forced to make innovation again. Otherwise, they will be kicked out from the market. Theoretically, the shake-out phase contains doubt caused by its ambiguous position between mature stage and decline stage [1]. Not to mention the vulnerability of our FLC measurement to fall into collinearity issue. Therefore, we decide to drop out the shake-out phase in our regression.

5) Decline Stage

In the decline stage, firms front the toughest time of their FLC. In consequence of the decreasing or almost none exist sales in this stage, firms liquidate their assets. The market is no longer responsive to a firm's existence. Financial difficulties and negative cash flows make companies decide to invest in high-risk portfolios [4]. This strategy is expected to be a defend tool preventing firms from bankruptcy.

B. Tax Avoidance

Tax avoidance is a part of the firm's business strategy which objective is to minimize the amount of tax paid [16] [17]. Tax plays a significant role in a firm's profit before tax balance. It also has a side effect on the number of distributable earnings. According to that matter, firms are motivated to do tax avoidance. Tax avoidance is the act of managing taxes paid from passive to aggressive [18]. This also means that tax avoidance changes a firm's tax performance from only fulfilling tax compliance responsibility to managing transactions which output can reduce the number of a firm's total tax expense. Tax avoidance activity is a basic tax behavior that companies do to produce tax savings [16].

C. Resource Based Theory

Resource based theory (RBT) will be used as the basic framework of thinking in connecting each phase of the FLC with companies' effort to maximize tax payment benefit through tax avoidance. Management intention and pattern in executing tax avoidance can be predicted by reviewing each stage of FLC resource characteristics in building its competitive advantage. Therefore, resource is defined as a firm's cash flows consisting of cash flow for operating, investing, and financing.

D. Hypothesis Development

1) The Relationship of Firm Life Cycle and Tax Avoidance

Every stage of an FLC has different characteristics and attribute. In every phase of FLC has a difference in profitability level, growth rate, firm size, leverage, cash holding, and dividend structure [19]. The diversity leads to the difference in firms' production and investment scheme [20], the competition of market share [21], and competitive power that is possessed [14]. Furthermore, every stage of FLC also have interest difference in resource allocation for operating, investing, and financing activities [1], and therefore will create FLC dynamics of applying tax avoidance. Based on the explanation above, it can be formulated our first hypotheses as follows:

H1: Firm life cycle has an influence on tax avoidance.

2) The Relationship of Introduction Stage and Tax Avoidance

By RBT, the lack of resources that can be utilized by companies during the introduction stage makes them tend to carry out tax avoidance. The execution of aggressive tax avoidance is supposed to give a competitive advantage for firms in the beginning phase of FLC [22] [23]. Based on the explanation above, it can be formulated our second hypotheses as follows:

H2: Introduction stage has an influence on tax avoidance.

3) The Relationship of Growth Stage and Tax Avoidance

Companies remain on doing tax avoidance in the growth stage. They still rely on debt as their financing source. This make a high-interest expense for them [24]. Behind the opportunities to implement tax avoidance in this stage,

positive cash flows give management confidence not to be involved in an aggressive tax avoidance practice [4]. Based on the explanation above, it can be formulated our third hypotheses as follows:
H3: Growth stage has an influence on tax avoidance.

4) The Relationship of Mature Stage and Tax Avoidance

Mature stage makes firms tend to maximize profit. This can be seen from growing amount of earnings per share, retained earnings / total assets, retained earnings / total equity, and return net operating assets, which indicate firms' propensity to distribute dividend [19]. Because of that circumstances, tax avoidance strategy doesn't become firms' priority of attention in this stage. Based on the explanation above, it can be formulated our fourth hypotheses as follows:
H4: Mature stage has an influence on tax avoidance.

5) The Relationship of Decline Stage and Tax Avoidance

In the last stage of its FLC, firm encounters finance difficulties due to the uncertainty of cash flows and the low liquidity level created in the decline stage [25]. This is reasoning firms to access tax avoidance in this stage. Consistent with the resource theory, firms that are under pressured to guard their market position in decline phase will motivate them to reduce tax payment using tax avoidance aggressively [26]. Based on the explanation above, it can be formulated our fifth hypotheses as follows:
H5: Decline stage has an influence on tax avoidance.

III. METHODOLOGY

A. Research Model

Based on the explanation above, we mapped our research model as presented below:

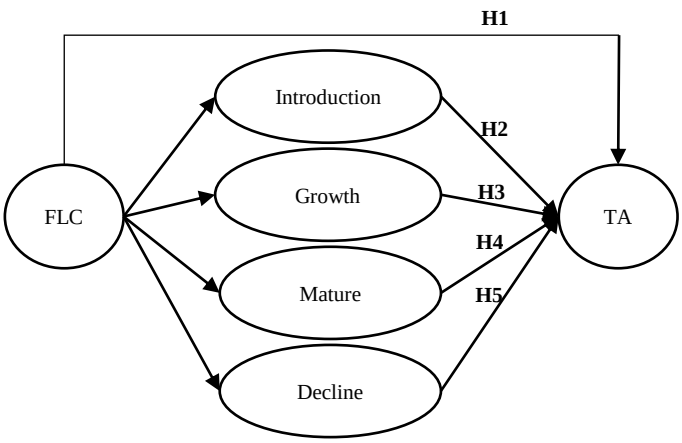

Fig. 1. Research Model

B. Sample Selection

Our initial sample began with 68 public listed manufacturing firms in Indonesia which were categorized as basic industry and chemicals sector during 2009 – 2016 period. The choice to use sector rather than the whole manufacture industry as our sample observation is based on the consideration that each sector has similar product characteristics and therefore is more relevant for answering this paper's predictions. The sample was reduced to 56 including firms that consistently publish their annual financial statements during the observation periods. This final research sample comprises 448 firm-year observations used for empirical analysis.

C. Regression Model

This study examines the association between phases in FLC and tax avoidance activities using the regression equation. The following is the empirical model used to test our hypothesis:

$$\text{TA} = a_0 + b_1\text{INTRODUCTION} + b_2\text{GROWTH} + b_3\text{MATURE} + b_4\text{DECLINE} + e \quad (1)$$

D. Variable Measurement

Following [1] model, we classify all firm-years in our sample into FLC stages based on their operating (CFO), investing (CFI), and financing (CFF) cash flows pattern. We exclude shake-out phase, which is void in theory, from our regression model to prevent a collinearity problem [11],. We measure the independent variables as a vector of dummy variables. The criteria are as follows:

1. Introduction: CFO < 0, CFI < 0, CFF > 0
2. Growth: CFO > 0, CFI < 0, CFF > 0
3. Mature: CFO > 0, CFI < 0, CFF < 0
4. Decline: CFO < 0, CFI > 0, CFF ≤ or ≥ 0
5. Shake-out: the remaining firm-year observations

As for the dependent variable, we employ effective tax rate (ETR) which is calculated by dividing total income tax expense with pre-tax financial income less special items during a year. The use of ETR as a measurement examines tax avoidance practice that affects the firm's net income. The lower value of ETR indicates that the firm engages in a higher degree of tax avoidance [17].

IV. RESEARCH RESULTS AND ANALYSIS

This research examines empirical predictions by using regression analysis. The total data of 448 firm-year observations used in this study were processed with IBM SPSS 23 software. We conduct several statistical tests that involve descriptive, correlation, collinearity, validity, and hypothesis testing provided by the program's tools. The following is the first output from SPSS analysis which is descriptive statistics:

TABLE I. DESCRIPTIVE STATISTICS

Variable	N	Min	Max	Mean	Std. Dev.
INTRODUCTION	448	0.00	1.00	0.0871	0.28223
GROWTH	448	0.00	1.00	0.2321	0.42267
MATURE	448	0.00	1.00	0.4665	0.49944
DECLINE	448	0.00	1.00	0.0670	0.25024
ETR	448	-7.68	9.75	0.1254	1.13671

Table I shows that the mean value of ETR is 0.1254. This value is lower than that of [11], i.e., 0.246. The highest ETR value is of 9.75 owned by SULI company in 2015 whereas the lowest value is -7.68 owned by TKIM company in 2016. As our FLC stages are calculated using dummy variables, the minimum (maximum) values of INTRODUCTION, GROWTH, MATURE, and DECLINE are 0.00 (1.00). MATURE has a high mean value, i.e., 0.4665, suggesting many mature firms in our research sample. In contrast, DECLINE has the smallest mean value, i.e., 0.0670, indicating a small number of firms encounter a decline stage in our observations.

TABLE II. STATISTICAL RESULTS OF T-TEST

Variable Relationship	t	Sig.
INTRODUCTION → ETR	-2.025	0.043**
GROWTH → ETR	2.228	0.026**
MATURE → ETR	3.247	0.001***
DECLINE → ETR	-2.183	0.030**

**significance at the 0.05 level
***significance at the 0.01 level

We use our linear regression model to predict the impact of the independent variable (X), which is FLC phases, on the dependent variable (Y). Table II presents the result that we got from the SPSS analysis. The influence of INTRODUCTION to ETR in equation analysis is -2.025 with a significant value of 0.043. The minus t value in INTRODUCTION stage indicates its negative association with ETR, which means the more introduction a firm is, the lower the ETR value. Lower ETR value in the INTRODUCTION shows that a firm is more related to tax avoidance in this stage. Based on this analysis, our H2 is supported. To gain a competitive advantage, the tight resource that is available in this phase pushes firms to access tax avoidance. [23] claims that the value of one additional cash in the introduction is more valuable than in the other stages of FLC. Other than that, the lack of company's internal capital to finance investment and innovation intensify the value of cash in this phase. Therefore, firms choose to spend their money on building competitive advantage rather than for paying tax. Tax savings that are obtained through tax avoidance will be used by companies to make innovation [27].

The t score for GROWTH is 2.228 with a significant value of 0.026. The positive value in GROWTH stage shows its positive association with ETR. This explains a significant tendency of firms to avoid tax avoidance in the growth stage., and therefore our H3 is supported. Even though firms are facing many tax benefit opportunities offered by the growing business environment, e.g., entering international taxation scope or managing intangible assets to manage profit [28], they still choose not to be involved in tax avoidance. Firms will consider the failure that could happen in executing tax avoidance. This failure could be an obstacle factor for firms in pursuing growth maximization in this stage. Companies are thinking about the reputational cost they have to endure if tax avoidance practice doesn't achieve its expected goal [29].

Table II also shows the relationship analysis of mature stage and tax avoidance. MATURE influences ETR in the amount of 3.247 in a very significant way at the 0.01 level, i.e., 0.001. Based on this statistical result, our H4 is supported. Again, same with the previous growth stage analysis, this phase has a positive relationship with ETR, which is shown from the positive value of its t score. As customers start leaving and cutting down their purchase, firms decide to reduce unnecessary investment in a mature phase. The absence necessity to invest lead to firms' passivity to gain financing source. This is an underlying background of why firms being ignorance about their financing cash flows, and thus choose not to be associated with tax avoidance in this stage. As firms mature, their primary attention is no longer on development and growth, but rather on the business operation efficiency, which can be achieved by pushing down the amount of operating expense [30].

At the bottom row of the t-test, table presented the analysis result for decline stage and tax avoidance. The t score for DECLINE is -2.183 with a significant value of 0.030. In the last stage of FLC, firms' tax avoidance behavior back again to its original pattern just like in the introduction stage. Based on this result, our last hypotheses, which is H5, is supported. As customers start to leave the companies, firms back to their original position where all resources are lacking at this point. Companies are cornered to take prospector strategies that contain a lot of risks to survive [31]. Even though firms' existence is at stake, tax avoidance still needs to be done because it is believed to be a powerful way to help them struggling in the decline stage. Tax avoidance is expected to be a firm's strength to outlast in the market.

These results imply that companies involved in greater tax avoidance practice in the introduction and decline stages of their FLC. Contrary with that findings, companies tend to avoid tax avoidance during growth and mature stages. This analysis results support our prediction that tax avoidance activity varies across FLC phases. FLC influences tax avoidance dynamics, and hence our H1 is supported. The t scores of all our variable relationships have satisfied the rule of t-test, namely the t scores are above the t table value, which is 1.9653. Overall, our results also have fulfilled the significance level of 5%. Moreover, MATURE has reached significance level at 1% with 0.001. This means the association effect of independent variables (FLC phases) on the dependent variable (ETR) is significant.

TABLE III. PEARSON CORRELATION RESULTS

Variable Relationship	Pearson Correlation	Sig.
INTRODUCTION ↔ ETR	-0.188**	0.000***
GROWTH ↔ ETR	0.065	0.171
MATURE ↔ ETR	0.207**	0.000***
DECLINE ↔ ETR	-0.181**	0.000***

**correlation significance at the 0.01 level (given by SPSS)
***significance at the 0.01 level

We furthermore check the correlation of FLC stages with tax avoidance by conducting Pearson correlation analysis. The purpose of this test is to identify the degree of interaction among the relationships that are tested in this paper. Table III displays the correlation test output from SPSS.

INTRODUCTION, MATURE, and DECLINE correlate with ETR at the 1% level. Their significance value of 0.000 points out the significant correlation in each variable relationship.

INTRODUCTION is negatively correlated with ETR, namely its correlation coefficient, which is marked by SPSS, shows negative value amounted -0.188. This also means that when firms enter the first phase of FLC, which is the introduction stage, they are most likely to have low ETR value. This value suggests that firms intensify their tax avoidance practice in the introduction stage. The trend of firms in this stage to have high research and development expense can be used to increase deferred tax [32]. Moreover, the government doesn't play much control roles to firms that are still in the introduction stage due to the low potential tax. Therefore, firms are motivated to do tax avoidance in this stage.

In the other, the Pearson analysis result shows that the correlation coefficient for GROWTH to ETR is 0.065, which indicates a positive relationship between those variables. This also means that the more GROWTH a firm is, the higher its ETR value, which implies the further the company employs tax avoidance strategy. This result also enhances our conclusion about H3 that we made before. In contrast with the condition in the other phase before, firms in growth phase have adequate resources. The implementation of tax avoidance can bring bad effect for firms in the growing stage. Firms who are aware about this effect will reconsider their decision to be engaged in tax avoidance. A company who does tax avoidance is prone to be marked as a bad citizen by the government and therefore will produce concern issue for the entity [33].

We further examine the correlation analysis result of MATURE stage to tax avoidance which shows Pearson correlation value of 0.207. SPSS considers this value significant by giving it significance symbol as presented in Table III. This relationship analysis also fulfills the significance at the 1% level, i.e., 0.0000. Companies in the mature stage still have positive cash flows although suffering from declining sales rate [1]. They also don't have urgent needs in this phase as their main goal is to hold on their position in the market by maximizing firms' internal operation. [34] concludes that best corporate governance can be found in the mature stage of FLC. This again explains why firms don't get involved in aggressive tax planning in this stage. This analysis part concludes that mature firms are most likely to reduce tax avoidance strategies in this stage.

We lastly examine the correlation between the last stage of FLC, which is decline phase, and tax avoidance. Table III presents that DECLINE is negatively correlated with ETR, namely its correlation coefficient shows negative value amounted -0.181. Companies that are already in this phase focus on paying off all their obligations [4] [23]. Firms' continuities are obstructed by insufficient resource in this stage. To gain more financing cash flows, firms are considering to access tax avoidance. The positive investment cash flows pattern describes the asset liquidation that happens in this stage. That activity also brings an increase in book-tax differences. The higher the value of the book-tax differences, the bigger the gap in commercial income and tax income [35]. The difference in book-tax amounts reveals the level of tax avoidance that a firm is engaged in. Firms are facing the hardest situation in this stage, and therefore they do tax avoidance as a way out from this situation.

TABLE IV. STATISTICAL RESULTS OF ANOVA TEST

	F	Sig.
Regression Model	11.745	0.000***[a]

[a.] Predictors: INTRODUCTION, GROWTH, MATURE, DECLINE
***significance at the 0.01 level

We also empirically test whether the independent variables simultaneously effect dependent variable in this research by conducting F test in SPSS program. Besides, this test also examines the validity of our regression model. Table IV is the results of the F test. The F score of our regression model is 11.745. This score has fulfilled the rule of thumb, namely the F score is above the F table value, which is 1.1693. Other than that, this test show a significance value amounted 0.000 of our equation model, which meets significance at the 0.01 level. From this outcome, we draw a conclusion that FLC phases (INTRODUCTION, GROWTH, MATURE, DECLINE) simultaneously significantly effect ETR. Overall, this test concludes the validity of our regression model.

TABLE V. COLLINEARITY ANALYSIS RESULTS

Variable	Tolerance Value	Full Collinearity VIF
INTRODUCTION	0.689	1.452
GROWTH	0.506	1.978
MATURE	0.450	2.223
DECLINE	0.737	1.357

A well-designed regression linear model is one that is free from collinearity problem. Moreover, a model that uses a dummy as an independent variable, like in this research, is prone to fall in collinearity issue. Therefore, we add an additional test to ensure that the independent variables in our model don't relate to this matter. Table V depicts the result of our collinearity test. The tolerance value (VIF) of DECLINE is 0.737 (1.357) followed by 0.689 (1.452) for INTRODUCTION, 0.506 (1.978) for GROWTH, and 0.450 (2.223) for MATURE. These numbers satisfy the rule of collinearity test, specifically caused by the tolerance values that are above 0.1. Reviewing from the VIF perspective, our model also passed another rule of collinearity test with VIF scores below 10. In conclusion, the regression model in our paper doesn't show any symptoms of collinearity issue.

TABLE VI. R SQUARED RESULTS

Variable	R-squared
INTRODUCTION	0.035
GROWTH	0.004
MATURE	0.043
DECLINE	0.033

The purpose of R-squared test is to examine the extent of independent variables in explaining dependent variable. This test also inspects degree of closeness between the data and the fitted regression model. From the table above, it is known that the R-squared value for MATURE is 0.043, meaning the large percentage effect of introduction phase on tax avoidance is 4.3% while the remaining 95.7% is explained by other variables. INTRODUCTION and DECLINE contribute 0.035 (3.5%) and 0.033 (3.3%) in explaining ETR, which mean another 96.5% and 96.7% of ETR are explained by other variables. Lastly, GROWTH explains 0.004 (0.4%) of ETR, while the remaining 99.6% is explained by other variables.

V. CONCLUSION

This research studies the dynamics of implementing tax avoidance across FLC stages. Overall, tax avoidance practice varies along the FLC phases. Based on the tests that have been done in this study, we find that firms significantly positively engaged with tax avoidance in introduction and decline stages while significantly negatively engaged in growth and mature stages. We conclude that firms are more associated in implementing tax avoidance at the first and last stage of its FLC, and less associated with tax avoidance at growth and mature phase.

These results are consistent with RBT which predict firm's propensity in applying tax avoidance strategy based on their resource availability and resource allocation to gain competitive advantage in every stage of its FLC. Findings in this research also indicate the extent of FLC phases in explaining firms' tendency to be involved in tax avoidance and thus useful for predicting current and future potential tax. This research is also expected to be an additional literature reference for the next researcher, especially in anticipating how difference in cash flows pattern affects tax avoidance at every FLC stages, despite the limited data and scope contained in this study.

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