Environmental Uncertainty as a Contingent Factor of Business Strategy Decisions: Introducing an Alternative Measure of Uncertainty

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Abstract

This study aims to examine a contingent factor of business strategy decisions, namely environmental uncertainty. The study applies secondary data as an alternative method to analyze technological uncertainty: a component of environmental uncertainty. To examine environmental uncertainty, this study develops an Environmental Uncertainty Index (EUI). Utilizing a sample of manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the period from 2009 to 2012 and a multinomial logistic regression, this study finds that the probability of a company pursuing a prospector strategy is greater than an analyzer strategy. Notwithstanding, the study fails to prove that the probability of a company opting for a defender strategy is greater than an analyzer approach. The findings suggest that the new measure of technological uncertainty is more applicable than the other existing measures. Furthermore, EUI measures the environmental uncertainty objectively, therefore, this new measure could be applied to future research. In general, this study broadens understanding concerning the relationship between business strategy and its contingent factors, namely environmental uncertainty.

JEL Classification: L10, L20, M14.

Keywords: Business strategy, contingent factors, environmental uncertainty, Indonesia.

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1. INTRODUCTION

A business strategy is crucial to achieve a company's goals and, as a form of guidance, it should be decided prudently by management. From the literature, the best strategy is one that is most suitable to the external environmental conditions faced (Otley, 2016; Bourgeois, 1980; 1985; Hambrick, 1982). This study analyzes environmental uncertainty as a contingent factor of business strategy choices by developing a new measure of technological uncertainty as a component of environmental uncertainty and establishes an Environmental Uncertainty Index (EUI). The study was motivated by weaknesses in existing methods to measure environmental uncertainty in previous studies regarding the effect of environmental uncertainty on determining the business strategy (Lopez-Gamero et al., 2011; Amoako-Gyampah, 2003; DeSarbo et al., 2005; Freel, 2005; Tjahjadi 2011; Koseoglu et al., 2013, etc.). Such studies primarily applied surveys to collect data on environmental uncertainty (Amoako-Gyampah, 2003; DeSarbo et al., 2005; Freel, 2005; Tjahjadi 2011; Koseoglu et al., 2013) as well as case studies (Lopez-Gamero et al., 2011). The survey method encountered weaknesses, including higher subjectivity and a lower response rate (Sekaran, 2003: 110), while the case study method also suffered because the results could not be generalized (Yin, 1994); which produced erroneous results and biases in their interpretation (Cooper and Schindler, 2006: 248). Therefore, this study applies secondary data to measure environmental uncertainty.

Companies constantly confront environmental uncertainty, consisting of three components, namely competitive uncertainty, market uncertainty and technological uncertainty (Bourgeois, 1985; Homburg, 2002; Kreiser and Marino, 2002; Davies and Walters, 2004; Gils et al., 2004; DeSarbo et al., 2005). This study transforms those three components into a single index of environmental uncertainty in order to measure uncertainty more objectively. An environmental uncertainty measure using secondary data has previously been developed by Gosh and Olsen (2009) as well as Habib et al. (2011) for market uncertainty and by Jermias (2008) for competitive uncertainty. This research constructs a measure of technological uncertainty using secondary data.

Using unbalanced panel data, this study finds that, *first*, under conditions of high environmental uncertainty, the probability of a company choosing prospector strategy is greater than analyzer strategy. Second, this study fails to prove that in a highly uncertain environment, the probability of a company preferring the defender strategy is greater than the analyzer strategy.

This study has two salient contributions to the literature. *First,* the measure of environmental uncertainty using secondary data, especially in terms of measuring technological uncertainty, is expected to address the measurement weaknesses encountered using primary data. The *second* contribution is to establish a more objective and comprehensive measure of environmental uncertainty.

The following chapter of this paper contains the literature review, development of the hypothesis, research models, samples and variables. Thereafter, the subsequent sections explore the empirical tests results, presenting fruitful discussions and the conclusions as well as the limitations and suggestions for future research.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Environmental Uncertainty

From the organizational literature, environmental uncertainty consists of several components, including competitive uncertainty, market uncertainty, technological uncertainty and regulatory uncertainty (Amoako-Gyampah, 2003; DeSarbo et al., 2005; Freel, 2005; Tjahjadi, 2011; Lopez-Gamero et al., 2011; Koseoglu et al., 2013, Arieftiara, 2017). Three of the four represent the major components predominantly faced by companies, especially in Indonesia, namely competitive uncertainty, market uncertainty and technological uncertainty.

Competitive uncertainty is predicated on the intensity of competition within the industry. Jahworski and Kohli (1993) defined competitive intensity as the extent of competition faced by a company within its industry. The second component, market uncertainty, entails the dips and gyrations of consumers' tastes and preferences, while technological uncertainty is triggered by the rapid development and pace of technological change in the industry.

Environmental uncertainty relates to management reaction (response) and discretion. For example, a manager could take a different course of action or apply discretion differently when confronted by higher uncertainty (Dunk and Nouri, 1998; Davila and Wouters (2005); Gosh and Olsen, 2009; Arieftiara, 2017). Simons (2000) suggested that managers should analyze external corporate conditions before taking a business strategy decision.

2.2. Business Strategy

Business strategy differs from corporate strategy in terms of the scope. Corporate strategy considers the company-wide scope, with goals that typically affect the whole company (Simons, 2000). On the other hand, however, business strategy has a narrower scope and focuses on the business units within a company. Simons (2000:17) opined that business strategy deals with how to compete on the markets entered. Moreover, business strategy has also been defined as the competitive weapon of a business, focusing on each unit inside the organization (Bourgeois III, 1980; and Langfield-Smith, 1997).

According to Miles and Snow (1978), there are three main typologies of business-level strategy: defender, analyzer and prospector, each with different characteristics, particularly in terms of how companies adapt to environmental changes. The characteristics each strategy are described as follows.

The defender strategy focuses on a narrow, secure and stable domain in terms of three organizational adaptation problems. Defenders focus on competitive pricing and maintaining high-quality products at a lower price than the competitors. The respective products do not follow trends but have an established market, the technology is stable and the focus is on low cost, minimizing risks and uncertainties, low staff turnover and maintaining organizational and operating stability, while avoiding aggressively seeking new opportunities.

The prospector contradicts the defender but both are similar in terms of consistently facing three fundamental adaptive issues. Miles and Snow (1978) explained that the environment faced by a prospector is more dynamic than the other types of organization in the same industry. A prospector's main focus is how to find and enter new markets as well as how to invent new products and create new opportunities. Therefore, a prospector allocates, develops and spends more resources on seeking new segments and new marketing areas, creating opportunities as well as inventing new products. Prospectors are more disposed to changes and uncertainty than

defenders. In addition, prospectors enjoy a greater degree of flexibility in terms of technology and organizational administration to adapt to new products and services.

The analyzer employs a strategy that takes the middle ground between the defender and prospector; it is a strategy that minimizes the risks and maximizes the opportunities to generate profit. Analyzers combine the respective strengths of defenders and prospectors into one system. Besides searching for new locations and new products to target consumers by following or imitating successful prospectors, the analyzer also focuses on maintaining established products and consumers as the primary sources of revenue. Therefore, the analyzer applies technological dualism to meet the requirements for flexibility and stability.

2.3. Environmental Uncertainty as a Contingent Factor of Business Strategy Decisions

According to contingency fit theory, a business strategy that fits with its environmental conditions should produce a different output than an unfit strategy (Otley, 1980; Prescott, 1986; Venkatraman, 1989; Jermias and Gani, 2004). From the empirical evidence, companies typically prefer to adapt to high-intensity competition and market changes by pursuing either a defender or prospector strategy rather than analyzer. In a highly uncertain environment, a company can maintain position by implementing a defender strategy, namely to strengthen the existing market and traditional products by focusing on cost efficiency, lower prices and higher quality. Furthermore, DeSarbo (2005) as well as Koseoglu et al. (2013) found that companies pursuing a defender strategy tended to outperform other businesses in the field.

Conversely, empirical results have also shown that companies implementing a prospector strategy in a highly uncertain environment tend to perform better (Russell and Russell, 1992; Jermias and Gani, 2004; Gyampah, 2003; Moon, 2001; Freel, 2005). Prospector companies achieve competitive advantage by immediately responding to changes in customers' tastes, focusing on developing new products and markets and implementing autonomy (decentralization). Hambrick (1983), however, found that companies implementing an analyzer strategy tended to perform better in a stable environment.

From the explanation above, under highly uncertain environmental conditions, companies tend to prefer a strategy with a definite position, either defensive or prospective, rather than an indefinite position. Therefore, the first hypothesis proposed in this study is as follows:

H_1: In a highly uncertain environment, the probability of a company pursuing a prospector or defender strategy would be higher than the probability of implementing an analyzer strategy.

3. RESEARCH METHOD

3.1. Sample

The research sample consists of manufacturing companies listed on the Indonesian Stock Exchange (IDX) for the period from 2009-2012. At that time, the external environment of the manufacturing industry was replete with fleeting change and dramatic turbulence in a highly competitive industry with large consumer shifts and rapid technological development (production technology) within the industry. Manufacturing companies in Indonesia were not only facing domestic competition but also global. Nevertheless, holding companies were omitted from the sample because they tend to implement a corporate-level strategy. All sample

observations were required to have complete data for the previous five years to measure strategy variables. The sample selection procedure is presented in Table 1 as follows:

Table 1. Sample Selection Procedure

	Year				Total
	2009	2010	2011	2012	
Total manufacturing companies listed on the Indonesia Stock Exchange	124	129	130	132	515
Less:					
-The number of observations for which complete data was not available as well as holding companies	(51)	(32)	(33)	(32)	(142)
Total samples (companies per year)	73	97	97	100	**379**

Source: Processed data

According to the observational data, Table 2 shows the distribution of samples based on strategy typology. The distribution of manufacturing companies was consistent with the previous observations, namely that analyzers were dominant, followed by prospectors and defenders (Gani, 2002; Rachmawati, 2015).

Table 2. Distribution of Observations Based on Strategy Typology

Strategy	Total Companies Per Year	Percentage
Prospector	137	36.15%
Defender	80	21.11%
Analyzer	162	42.74%
Total	**379**	**100.00%**

Source: Processed data

3.2. Research Models

This study applied a multinomial logit (mlogit) regression model to estimate the empirical model because there were three possible outcomes for the dependent variables and, therefore, the mlogit regression model was the most suitable (Hosmer and Lemeshow, 2000). According to the hypothesis, there are three possible outcomes for the dependent variables: 0 if the company is classified as an analyzer, 1 if classified as a prospector and 2 if classified as a defender (0 if $13 \leq STRA_{it} \leq 23$; 1 if $STRA_{it} > 23$; and 2 if $STRA_{it} < 13$). Two logit functions were required to estimate the multinomial logistic model, which had three possible outcomes for the dependent variables, namely the logit function of $y = 1$ to $y = 0$ and the logit function of $y = 2$ to $y = 0$, where $y = 0$ (as the baseline). From the multinomial logistic regression outputs, the probability of each response $y = 0$ was compared to the greater response, $y > 0$. Along with the hypothesis, the analyzer was the base outcome and categorized as 0.

Based on Hambrick (1982), Freel (2005), DeSarbo et al. (2005), Habib et al. (2011), and Koseoglu et al. (2013), the model used to test the hypothesis is as follows:

$$\log\left[\frac{Prob\ (STRA_{it} \geq 1)}{Prob\ (STRA_{it}=0)}\right] = \alpha_0 + \alpha_1 EUI_{it} + \alpha_2\, BME_{it} + \alpha_3 MCAP_{it} + \alpha_4 OCAP_{it} + \alpha_5 AGE_{it} + \alpha_6\, SIZE_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

Where, $STRA_{it}$ is the company's business strategy, in the form of a dummy variable, which is 0 if analyzer, 1 if prospector and 2 if defender; EUI_{it} is the Environmental Uncertainty Index (EUI), which is a composite measure consisting of market uncertainty, competitive uncertainty and

technological uncertainty. Board Monitoring Effectiveness (BME) was included as a control variable, encompassing the board of commissioners and audit committee. The effectiveness of the board of commissioners was based on the independent proportion of the board, the activities, size or number of commissioners on the board as well as the board's competences, while the effectiveness of the audit committee considered the activities, size of the audit committee, as well as the expertise and competence of the audit committee. The remaining control variables included the company's marketing capabilities (Marketing Capabilities-MCAP), operating capabilities (Operation Capabilities-OCAP), number of years in operation (AGE_{it}), and size of the company ($SIZE_{it}$), measured using a natural logarithm of total assets.

There are two criteria to accept the hypothesis: *Firstly*, for the logit function that compares y = 1 to y = 0 (base outcome), H1: $\alpha_1 > 0$, means that in a highly uncertain environment, a company would be more inclined to prefer prospector strategy rather than analyzer. *Secondly*, for the logit function that compares y = 2 to y = 0 (base outcome), H1: $\alpha_1 > 0$, means that in a highly uncertain environment, a company would prefer defender strategy rather than analyzer. This study expects the sign for each control variable as follows: $\alpha_3 > 0;\ \alpha_4 > 0;\ \alpha_5 < 0;\ \alpha_6 > 0$.

3.3. Measurement of Variables

3.3.1. Business strategy (STRA).

A firm's business strategy (STRA) is the approach used by work units to confront the competition. Following Ittner et al. (1997) and Bentley et al. (2011), STRA was measured using a composite strategy score that consists of six-ratios, including: (1) The ratio of Research and Development to Sales (RDS): a ratio of research and development expenditure (XRD) divided by sales (SALE) to measure the intensity of companies developing new products; (2) The ratio of Employees to Sales (EMPs): a ratio of the number of employees (EMP) divided by sales (SALE) to measure the company's ability to produce and distribute goods efficiently; (3) The geometric mean market value of assets (GMVA): the log of asset market value (total debt + MVE) to measure the historical growth or investment opportunities; (4) Employee Turnover (σ (EMP)): standard deviation of total number of employees (EMP) to measure of the stability of the company; (5) Marketing to Sales (SGAS): cost ratio of sales, administration and general (SGA), the total sales (SALE) to measure the company's focus on exploiting new products and services; and (6) Capital intensity (CAP): capital intensity was calculated using total PPE divided by total assets (PPE/TA) to measure commitment to technological efficiency.

In accordance with Bentley et al. (2011), the value of each ratio was ranked into annual quintiles, with companies in the highest quintile receiving a score of 5, followed by companies in the second quintile receiving a score of 4 and so on. Companies were categorized as a defender if the average rank for the six ratios was in the lowest quintiles (score of 1 or 2) or if the total score was in the 6 to 12 range. In contrast, companies were categorized as a prospector if the average rank for the six ratios was in the highest quintiles (score of 5 or 4). Consequently, if a company scored in the range of 24 to the maximum of 30, it was considered a prospector. Furthermore, if a company scored in the middle range (13-23), it was categorized as an analyzer.

3.3.1.2. Environmental Uncertainty

Environmental uncertainty represents the external environment of a business, which may affect the management's determination of business strategy. This study applied three variables as a proxy of environmental uncertainty as follows:

1) Market Uncertainty (CVSALES) indicates changes in consumer tastes, measured by the standard deviation of sales (Gosh and Olsen, 2009; Habib *et al.,* 2011):

$$\boldsymbol{CV(Z_i)} = \frac{\sqrt{\sum_{k=1}^{5} \frac{(z_1 - \bar{z})^2}{5}}}{\bar{z}} \quad \textbf{(3)}$$

Where: CV is the coefficient of variation, Z_i is the observed annual sales for the company *I,* and $\bar{Z}$ is average sales during the previous 5 years. A higher standard deviation of sales indicates a greater degree of market uncertainty faced by the company.

2) Competitive Uncertainty (Competitive Intensity/COMPINT) indicates the level of competition faced by the company in a particular market (Jaworski and Kohli, 1993). Competitive intensity is measured using the total number of companies (listed and unlisted) in the manufacturing industry. A larger number of companies implies a greater degree of competitive intensity and, thus, more environmental uncertainty.

3) Technological Uncertainty (TECH) indicates the rate of technological change encountered based on the type of industry (Joseph, 2002). Technology is also defined as a company's resources used to develop new products and services, such as the production system as well as distribution or delivery systems (Miles and Snow, 1978; DeSarbo et al., 2005). Technological change is associated with innovation intensity within an industry (Hambrick, 1983; Buchko, 1994; Agarwal and Audretsch, 2001; Joseph, 2002). Therefore, technological uncertainty (TECH) is measured using the innovation intensity of the three biggest competitors within an industry for a 3-year period. Hambrick (1983) previously used the three biggest competitors within an industry and proved the validity of the approach. A period of 3-5 years is sufficient to assess the outcome of strategy implementation and to evaluate the achievement of changes that have been made (Ittner et al., 1997; Hambrick, 1983). Innovation encapsulates the launch or introduction of new products and services as well as the opening of new branches, new factories or new departments that support the production and distribution systems (Ittner et al., 1997; Geroski, 2007).

A company received a score of 2 if there was more than one innovation; a score of 1 if there was at least one innovation; and 0 if there was no innovation or the information was unavailable in the annual report. The scores for three biggest competitors were then tallied for each industry type, with the total score revealing the level of technological uncertainty. A higher score implied more technological uncertainty within an industry.

The next step was to calculate the percentile rank for each component's value per company based on economic sector. Therefore, the environmental uncertainty index for each company was the average percentile rank of the three proxies (Bushman *et al.,* 2004). An average value of more (less) than 0.5 implied high (low) uncertainty.

3.3.1.3 Control Variables

The first control variable in this study was Board Monitoring Effectiveness (BME) as one of the main functions of corporate governance, namely monitoring management activities, particularly the formulation and implementation of business strategies. Based on Hermawan (2009) and the ASEAN Corporate Governance Scorecard, the five proxies used to assess board monitoring effectiveness were: BoC independence; BoC activities; BoC size; BoC competence; and audit committee effectiveness. Following Hermawan (2009), this study employed a questionnaire (checklist) to gauge each proxy and assess the BoC's characteristics.

The *second* control variable was marketing capabilities (MARCAP), measured by the covariance of sales. Dutta et al. (1999) and Nath et al. (2010) found that MARCAP correlated positively with the propensity for prospector strategy. The *third* control variable was operating capabilities (OCAP), measured by how close the actual cost of production, as a frontier cost, was to the forecast (maximum level of productivity per the level of resources used). Dutta et al. (1999) and Nath et al. (2010) found that OCAP correlated positively with the proclivity for the defender strategy. The *fourth* control variable, Age (AGE), is the number of years a company had been operating, which correlated inversely with the prospector and defender strategies (Cucculelli, 2014; Coad et al., 2016). *Fifth*, firm size (SIZE), measured using a natural logarithm of total assets, indicated that a bigger firm size implied more resources and greater capabilities, thus the organization was better structured and would tend to focus on either a prospector or defender strategy; **not** a hybrid strategy (analyzer).

4. RESULTS

4.1. Descriptive Statistics

A brief overview of the variables' characteristics is presented in Table 3, while all outliers were winsorized. The average value of the Environmental Uncertainty Index (EUI) showed that all samples faced a moderate level of uncertainty, with one company embroiled in a highly uncertain environment (maximum EUI value of 0.8737). The average BME value was 0.6973, indicating that, on average, board monitoring effectiveness was adequate or fair.

Table 3. Descriptive Statistics of Variables

Variable	Mean	Min	Max	Standard Deviation
EUI	0.4345	0.0427	0.8737	0.1691
BME	0.6973	0.3542	0.9375	0.0879
MCAP	20.7115	14 102	26.8804	1.8791
OCAP	20.2639	15.6795	24.3861	1.4395
AGE	32.2180	8	106	15.0948
SIZE	27.1155	9.7240	32.3431	2.5691

Notes:
EUI: Environmental Uncertainty Index; BME: Monitoring Effectiveness of Board of Commissioners; MCAP: Marketing Capabilities; OCAP: Operational Capabilities; AGE: Corporate Experience (years in operation); SIZE: Company Size, a natural logarithm of total assets.

Source: Processed data

The MCAP value was aligned with the values from the sales regression model, while OCAP was aligned with the values from the cost of goods sold (cost of revenue) regression model. From Table 2, the average MCAP reading was 20.7115, indicating an average corporate sales capability of 20.7115 (equivalent to Rp988,283,344). The average OCAP value was 20.26392, indicating an average operational capability of 20.2639 (equivalent to Rp631,696,743).

4.1.1. Components of the Environmental Uncertainty Index (EUI)

The distribution value, by component, of environmental uncertainty for all samples (manufacturing companies) for the period from 2009 to 2012 is presented in Table 4. Market Uncertainty, measured by the standard deviation of sales, returned a mean value of 0.346, with a maximum of 1.876248. Therefore, manufacturing companies in Indonesia face various degrees of competitive uncertainty; with the number of competitors ranging from a minimum of 2 up to a

maximum of 2001. More (fewer) competitors in the industry implied more (less) environmental uncertainty.

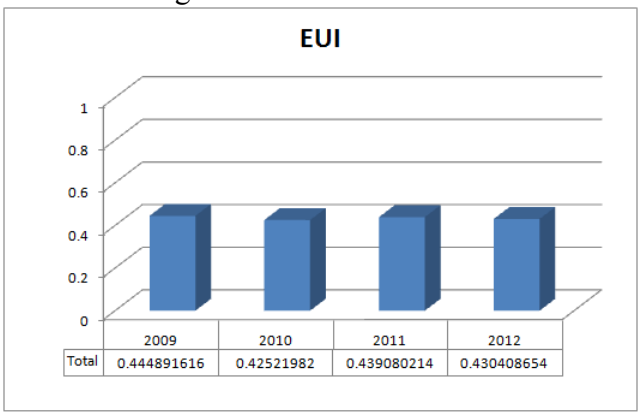
Table 4. Value per Component of Environmental Uncertainty

Component	Mean	Min	Max	Median	Standard Deviation
Market Uncertainty	0.290169	0.022323	1.876248	0.226008	0.245839
Competitive Uncertainty	293.6887	2	2001	91	458
Technological Uncertainty	3.696281	0	6	4	1.865206

Source: Processed data

Technological uncertainty is measured using a score for innovation based on economic sector. From Table 4, the average innovation score of companies in the study sample was 3.696281, with a maximum value of 6 and minimum of 0.

The average external environmental uncertainty of firms operating in the manufacturing industry per annum is presented in Figure 1.



Source: Processed data

Figure 1. Average Environmental Uncertainty Index (EUI) per Annum

Environmental uncertainty among manufacturing companies in Indonesia peaked in 2009. A crisis befell the global business environment in 2008, which had little indirect impact on economic conditions in Indonesia, particularly as of early 2009. During the second half of the year, Indonesia's economy showed further signs of improvement (www .bi.go.id). In 2010, 2011 and 2012, economic dynamics in Indonesia remained solid, evidenced by robust economic growth of 6.1%, 6.5% and 6.2% respectively. That phenomenon demonstrated the dynamism of the nascent business environment in Indonesia, with stable growth posted in the 6% range, which also corresponded with research data showing that environmental uncertainty during the period from 2009-2012 was stable and tended not to fluctuate. From the one-way ANOVA test results, there was no significant difference in the average value of environmental uncertainty between the four years in question.

Table 5. Descriptive statistics EUI per Industry Sector

Subindustry	Mean	Min	Max	Median	Standard Deviation
Chemical and Basic Industry	0.4441	0.0663	0.8737	0.4290	0.2003
Miscellaneous Industry	0.4142	0.1050	0.8377	0.4187	0.1714
Consumer Goods Industry	0.4311	0.0687	0.7927	0.4363	0.1589

Source: Data processed

A comparison of EUI between subindustries is presented in Table 5. The three subsectors of the manufacturing industry produced a mean EUI value of around 0.4, with the chemical and basic industry subsector having the highest and lowest EUI value. This implies that companies operating in the chemical and basic industry subsector face greater environmental uncertainty.

4.2. Correlation Analysis

Results of the correlation analysis between the variables STRA, EUI, BME, MCAP, OCAP, SIZE and AGE are shown in Table 6. The results indicate that the EUI correlated positively and significantly with STRA, implying that a higher value of environmental uncertainty correlated with a higher STRA value (prospector strategy). Such a correlation gives an early indication that the hypothesis is supported.

Table 6. Correlation of Testing Results

Variable	STRA	EUI	BME	MCAP	OCAP	AGE	SIZE
STRA	1,000						
EUI	0.0769 **	1,000					
BME	0.0137	0.0387	1,000				
MCAP	0.0534	0.1272	0.2598	1,000			
OCAP	-0.0188	-0.0378	0.2998 ***	0.7987 ***	1,000		
AGE	-0.0312	-0.0802 **	0.0568	0.2211 ***	0.2597 ***	1,000	
SIZE	0.0352	0.0411	0.2587 ***	0.6937 ***	0.7026 ***	0.2629 ***	1,000

Notes:
STRA: dummy strategy, analyzer is 0, prospector is 1 and defender is 2; MCAP: Marketing Capabilities*;* OCAP: Operational Capabilities*;* EUI: Environmental Uncertainty Index; BME: Monitoring Effectiveness of Board of Commissioners; SIZE: company size as a natural logarithm of total assets; AGE: company experience (number of years operating); SKP: company experience (number of tax assessment notices received in that year)
*** Significant at 1%; ** Significant at 5%; * Significant at 10%

4.3. Multivariate Results

Testing Hypothesis 1 is shown in Table 7. The results consist of two outputs due to the multinomial logistic research model. *First* is the logistic function of STRA (1), which examines the probability of preferring prospector over analyzer strategy. It shows that EUI has a positive and significant coefficient, indicating that under conditions of high environmental uncertainty, a company is more likely to pursue a prospector strategy than an analyzer approach.

Second, the logistic function of STRA (2), a logit function that examines the probability of preferring defender rather than analyzer strategy, shows that the EUI has a positive but not significant coefficient. This indicates that in a highly uncertain environment, the probability of a company choosing a defender strategy is no greater than an analyzer strategy, thus partially supporting the hypothesis.

Table 7. Results of Hypothesis Testing

Model 1:

$$\log\left[\frac{Prob\ (STRA_{it}\ \geq 1)}{Prob\ (STRA_{it}=0)}\right] = \alpha_0 + \alpha_1 EUI_{it} + \alpha_2\, BME_{it} + \alpha_3 MCAP_{it} + \alpha_4 OCAP_{it} + \alpha_5 AGE_{it} + \alpha_6\, SIZE_{it} + \varepsilon_{it}$$

Dependent Variable = Log STRA			
Independent Variable	**Expected Sign**	**Coefficient**	**Significance**
STRA logistic function (1):			
EUI	**H1: +**	1.3225	0.053*
BME	+/-	0.7045	0.338
MCAP	+	-0.3819	0.007***
OCAP	+	1.3372	0.000***
AGE	-	0.0019	0.416
SIZE	+	-0.0207	0.395
Constants	+/-	-20.3423	0.000***
STRA logistic function (2):			
EUI	**H1: +**	-2.1303	0.012
BME	+/-	1.6129	0.203
MCAP	+	0.2973	0.025**
OCAP	+	-1.0173	0.000***
AGE	-	-0.0041	0.365
SIZE	+	0.0085	0.461
Constants	+/-	13.0559	0.000***
LR chi2			148.34
Prob> chi2			0.0000
Pseudo R2			0.1847
N			379

Notes:
STRA: dummy strategy, analyzer is 0, prospector is 1 and defender is 2; MCAP: Marketing Capabilities*;* OCAP: Operational Capabilities*;* EUI: Environmental Uncertainty Index; BME: Monitoring Effectiveness of Board of Commissioners; SIZE: company size as a natural logarithm of total assets; AGE: company experience (number of years operating); SKP: company experience (number of tax assessment notices received in that year)
*** Significant at 1%; ** Significant at 5%; * Significant at 10%

Source: Processed data

5. DISCUSSION AND IMPLICATIONS

The results provided empirical evidence that environmental uncertainty is a contingent factor of business strategy. The output of the first logit function supported the probability of a company choosing prospector strategy over analyzer, specifically under conditions of high environmental uncertainty. The results are consistent with Russell and Russell (1992); Jermias and Gani (2004); Freel (2005); Gyampah (2003); Bastian and Muslich (2012); as well as Moon (2013). Furthermore, the results also revealed a contingent fit between prospector strategies in a highly uncertain environment. The results have far-reaching implications, especially if the government expects stronger industrial growth, particularly the manufacturing industry, as well as a more equitable distribution of public welfare. Consequently, the Government, as regulator, should support companies facing turbulent environmental conditions. For instance, the Government could promulgate policies for the manufacturing industry to simplify licensing procedures and expand businesses or issues tax breaks and incentives along with policies to stimulate exports and many others.

The results of the second logit function failed to provide unequivocal evidence that the probability of selecting a defender strategy exceeded the analyzer strategy. This result is consistent with Moon (2013), who found that in a highly uncertain environment, prospectors and analyzers outperformed defenders, while defenders were also shown to be more suitable when conditions were less uncertain or more stable.

6. CONCLUSION, LIMITATIONS AND SUGGESTIONS

This study investigated the contingent factors of business strategy choices, namely environmental uncertainty, and developed an alternative method to assess environmental uncertainty, using the Environmental Uncertainty Index (EUI). Using sample data from manufacturing companies listed on the Indonesia Stock Exchange from 2009-2012, along with a multinomial logistic regression, this study produced two salient findings. *First*, environmental uncertainty is a contingent factor of business strategy choice, particularly when concerning the prospector strategy. The finding supports prevailing wisdom that, in a highly uncertain environment, a company is more likely to choose a prospector strategy than an analyzer approach. *Second*, the study failed to provide empirical evidence that under highly uncertain environmental conditions, the probability of a company choosing a defender strategy is greater than an analyzer strategy.

The Environmental Uncertainty Index (EUI) facilitates the process of assessing environmental conditions since all three components of uncertainty are measured using secondary data. In addition, the EUI could prevent biases, specifically when measuring technological uncertainty, and this research has developed a measure of technological uncertainty using secondary data sources that could be transferred to measure technological uncertainty in future research.

The main limitation of this study was a lack of data availability for unlisted firms. Therefore, only manufacturing companies appeared in the sample along with the total instead of the Herfindahl Index. Based on previous studies, the Herfindahl Index is a more precise instrument to measure competitive intensity within the industry, but in Indonesia the market share data of unlisted companies was not available. Consequently, future research could apply the Herfindahl Index to listed companies.

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