# Business strategy and industrial competition: the case of manufacturing companies

*by* Bambang Tjahjadi

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**Abstract:** This research aims to test if appropriate business strategy can improve firm performance using industrial competition as its moderating variable. This study applies Miles and Snow's (1978) business strategy typology: prospectors and defenders. This study takes manufacturing companies listed on Indonesia Stock Exchange (IDX) during 2011–2016 as the research object, as they have complete business processes to better describe complete business strategy implementation. Research in emerging markets, such as Indonesia, will provide a complete picture of the impact of business strategy on business performance. The results show that prospectors have better financial performance than defenders and will last for two years after the strategy was executed. This study also finds that prospectors who are committed to innovation have a better performance than defenders, especially in high levels of industrial competition. This result is essential for managers to adopt a suitable business strategy under the competitive environment.

**Keywords:** business strategy; defenders; firm performance; innovation; level of competition; prospectors.

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## 1   Introduction

Globalisation transforms the competition faced by companies in the world. The company is required to win a competition at the domestic level and be able to survive and win the competition at the global level. This competition makes the issue of business strategy more crucial for corporate management. Mistakes in taking strategy choices will be fatal for competitiveness, even the survival of the company. In the competitive advantage theory, two views appear: the resource-based view (RBV theory) and industry organisation theory (I/O model). In the RBV's view, the sustainability of the organisation's competitive advantage is determined by the organisation's internal resources (Wernerfelt, 1984). On the other hand, I/O model views that factors outside the organisation will affect the organisation's ability to maintain its superior performance (Amit and Schoemaker, 1993). Both theories are contradictory, and each has its supporters. However, despite the differing views, the goals to be achieved are the same: to win an organisation's competitive advantage by obtaining the above-average return.

This study investigates the role of business strategy in improving business performance. This research uses Miles and Snow (1978) business strategy typology that divides the company's business strategy into four categories: prospectors, defenders, analysers and reactors. Prospectors are characterised by a high commitment to innovation and product development and are always looking for new opportunities (Miles and Snow, 1978). This characteristic corresponds to the company included in the category of innovators. Conversely, defenders emphasises on lower operating efficiency and lower product development levels. They are more focused on maintaining the current market share (Miles and Snow, 1978). Analysers have characteristics between the two, while reactors are only acting on what their competitors do.

The business strategy typology of Miles and Snow (1978) is considered an objective indicator in measuring the company's business strategy. According to Snow and Hambrick (1980), this typology's advantage is controlling perception bias and interpretive bias. This approach is appropriate to identify the strategy implemented and realised by the company. Therefore, the business strategies of Miles and Snow (1978) are widely used in research related to business strategy (Miller and Friesen, 1978;

Venkatraman and Grant, 1986), especially research using financial data (Bentley et al., 2013; Hambrick, 1983; Hoque et al., 2013).

Based on Miles and Snow (1978) strategy, which strategy best results in the company's best performance? Do prospectors, with their commitment to innovation, always provide an above-average return? It turns out that, from the existing experience, many innovators have actually failed. As a result of this innovation's failure, the company suffered hundreds of millions of dollars. These facts bring awareness that other factors influence corporate strategy's choice to achieve optimal performance.

With the rapid influx of globalisation that hit the world today, companies who want to survive and win the competition have to adapt to their environment. This condition brings consequences to the choice of strategy that the company will take. A strategy is an adaptation mechanism (Hambrick, 1983) and should be able to align business with its environment (Andrews, 1971; Porter, 1980). A company does not operate alone. A company should interact with other companies and compete in acquiring resources or market share. Therefore, the role of industry competition in the relationship between strategy choice and company performance is critical to be analysed.

Competition cannot be separated from innovation. Schumpeter (1943) presents a theory that becomes the basis of many studies related to the level of competition and innovation. According to Schumpeter's (1943) view, monopolies are the price that must be paid to ensure innovation activities continue to work and succeed. This argument is based on the idea that monopolists gain the advantage of their ability to prevent imitation so that the monopolists are freer to continue to innovate. This Schumpeterian view gets a lot of support (Cantner et al., 2008; Bucci and Parello, 2009).

On the other hand, many researchers criticise this view, among them, Arrow (1972) states that a competitive market environment will foster the spirit of innovation from the company. This statement is supported by several researchers, including Porter (1990), Geroski (1990) and Gilbert (2006).

In Indonesia, the competition climate has also changed due to globalisation. In this global market, the Indonesian government tries not to take actions specifically designed to impede trade, such as tariff barriers or import quotas restrictions. The government issued Law No. 5/1999 on Monopoly Prohibition and Unfair Business Competition to support a competitive climate. The government also established the business competition supervisory commission (KPPU) in 1999, which worked effectively in 2000 to monitor Indonesia's competitive business.

As a market that is considered very potential, many foreign companies are trying to incorporate their interests in Indonesia. If they cannot legally monopolise Indonesia's market, they do so substantially by undertaking various mergers and acquisitions with local companies. In 2010, the government issued PP No. 57/2010 concerning the merger of business entities and acquisitions of company shares that can affect monopoly practices and unfair business competition. Nevertheless, it does not seem to stop domestic and foreign companies' efforts to enjoy promising Indonesian market share. The number of mergers/acquisitions increases with the pace of national and international economic growth. The period of 2010 and 2011 are the years when mergers and acquisitions are at their peak. Until the first quarter of 2012, the merger/acquisition notification still flows rapidly to KPPU and is expected to continue over the years. Monopoly is not just a legal matter, but it can also be economical in which consumers have very limited choices or even have no choice related to the product or service. With a monopoly or oligopoly, the

market will be more concentrated. Associated with the Schumpeterian view, does this actually encourage innovation or hinder the pace of innovation?

This study aims to investigate whether a business strategy can improve the company's performance. From previous research results, there has been no conclusive result of whether prospector with its innovation strategy or defender with its 'defence' strategy will have the best result on performance. According to Hambrick (1983), defenders have better performance than prospectors in terms of profitability for the current period, whereas, prospectors have better performance than defenders in terms of market share (Hambrick, 1983). Research by Sarac et al. (2014) shows evidence that prospectors perform better than others (Zamani et al., 2013). The studies about strategy and performance are also conducted in various countries in the world. In China, the performance of prospectors is negative. In the USA and Turkey, the best performing is analysers (Parnell et al., 2012). That is why it still leaves room for researchers to study this area. Besides, from the previous research, there is a lack of study for how long the chosen strategy can win the above average return. We believe this information is vital for the decision makers.

It is also considered necessary to investigate the company's environment; in this case, the level of industry competition faced by the company. Therefore, this research also examines whether the tightness of competition will affect the relationship between the company's choice of strategy and its performance.

This study takes the research object of manufacturing companies in Indonesia. The Indonesia Stock Exchange is a representation of stock exchanges in developing countries. Various previous studies have taken the objects of stock exchanges in developed countries or western countries. This study complements research on business strategy and company performance in developing countries. Based on the research of Jusoh and Parnell (2008), companies in developing countries implement business strategies that emphasise financial measures of business performance more than western countries in general. Therefore, studies on developing countries will enrich a comprehensive understanding of the role of business strategy on firm performance in different environments.

This study takes companies in the manufacturing industry as a case study. There are several reasons why companies in the manufacturing industry are chosen. First, manufacturing companies have a complete and complex process to better describe the complete business strategy implementation, such as dealing with market-product changes, customers, and competitors. Second, research by Barth et al. (2019), provide new economy and non-new economy categories. Following its characteristics, the manufacturing industry is included in the non-new economy, which is predominantly industrial, whereas the new economy category is based on services and information technology. But, despite the non-new economy categorisations, it turns out that manufacturing companies have a much higher tendency to apply for patents than other companies (OECD, 2007). Nowadays, the manufacturing industry is transforming from product-oriented to product-service innovation (PSI) oriented business (Gonzalo-Hevia and Martín-Peña, 2020). This transformation makes strategy choice is a crucial decision for manufacturing companies. Once the strategy is chosen, all the company's resources will be devoted to serving the strategy's success.

This research is expected to provide a theoretical contribution in the field of business strategy innovation concerning the level of competition, enriching the research of innovation strategy and providing a broader understanding of the success of the business

strategy innovation and the environment in which the manufacturing companies operate. Also, this research gives a practical contribution to manufacturing companies. It shows how long business strategies can survive, what business strategy is most appropriate according to its industrial level of competition, and how industry-level associate with its performance. All of these contributions are vital to the management of the company. The company's success is determined by the business strategy; it should suit to the level of competition of the industry. This study also describes the success rate of the strategy or how much time it takes before the business strategy loses power to improve performance.

The remainder of this paper is divided into the following: the second part discusses the hypothesis's development, the third part describes data and methodology used, the fourth part discusses the results and analysis and the last section concludes.

## 2 Review of the literature and development of hypothesis

### 2.1 Business strategy typology

Every company must have the most appropriate strategy to ensure its business continuity. The strategy has a very vital role in the success of the company. This strategy determines every step taken by the company to achieve its goals. Porter (1985) developed a framework that guides how companies should choose a business strategy to compete effectively. Furthermore, Porter (1996) also emphasises that the essence of business strategy is its ability to carefully select a set of activities that can provide unique value to its customers.

Business strategy typology becomes a research area that gains much attention in strategic management research. According to Parnell (2011) and Zamani et al. (2013), business strategy typology is a framework that identifies competitive strategies. This typology was developed and used as a theoretical basis for identifying various strategies across industries. Many experts develop different types of business strategy typologies. Miles and Snow (1978) identify four business strategies: prospectors, analysers, defenders and reactors. After that, Porter (1980) developed a generic strategy that identifies three types of business strategy: cost leadership, differentiation and focus. In addition, there are still many researchers who propose various types of business strategy typologies, such as Miller (1990), who developed high-performance gestalts (craftsman, builder, pioneer and salesman); March (1991) presents the strategy of Exploration and Exploitation; and Treacy and Wieserma (1995) suggest three types of business strategies: operational excellence, product leadership and customer intimacy. All of these studies show that business strategy typology is essential and attracts researchers to provide a framework that can serve as a reference for companies in determining the most suitable business strategy to gain competitive advantage.

Of all the business strategy typologies proposed by researchers, Miles and Snow (1978) strategy is one of the most sought after strategies and is the most widely applied strategy (Hambrick, 2003). Miles and Snow (1978) business strategy is widely used as a reference to examine the relationship between business strategy and company performance that comes from different industries and has different sizes. The validity of these typologies has been tested with different settings and is particularly suitable for research using financial data (Bentley et al., 2013; Hambrick, 1983; Hoque et al., 2013).

Based on previous research, this study focuses on implementing business strategy typology developed by Miles and Snow (1978). Miles and Snow (1978) typology provide the organisation's character as a complete system, mainly related to strategy orientation (Snow and Hambrick, 1980). Of the four business strategy typologies developed by Miles and Snow: prospectors, analysers, defenders and reactors, only the first three are considered real – often referred to as viable strategy (Anwar and Hasnu, 2016; Zhang, 2016). The strategy is divided based on the company's behaviour in analysing its environment, the breadth of products or services offered, the level of innovation and the use of technology in solving problems (Miles et al., 1978). These strategies are a continuum by placing the prospectors and defenders at both ends. Prospectors are rapidly changing their product mix and becoming market leaders in innovation. Prospectors are committed to innovation rather than efficiency. They innovate in products or services and actively seek new market opportunities (Anwar and Hasnu, 2016; Hoque et al., 2013; Miles and Snow, 1978). Instead, defenders focus on production efficiency. They focus on maintaining existing market shares and serving existing customers (Hoque et al., 2013; Miles and Snow, 1978; Zhang, 2016). Analysers are companies in the middle of the continuum, where the company has a mixture of prospectors and defenders' characteristics. Reactors are considered inconsistent strategies in solving problems and are considered unsustainable strategies, and therefore this strategy is also called a non-viable strategy. Reactors are less consistent in implementing strategies than the others and respond only to environmental pressure (McDaniel and Kolari, 1987). The reactors strategies make it difficult to identify and are often ignored for research purposes (Shortell and Zajac, 1990). This study focuses on the strategy of prospectors and defenders at the end of the continuum in line with previous research in management and accounting (Bentley et al., 2017, 2019; Hsu et al., 2018; Navissi et al., 2017; Maniora, 2018). Besides, Miles and Snow (1978) and Hoque et al. (2013) state that prospectors and defenders' strategy is the most dominant.

### 2.2   Innovation and market competition

Innovation and competition are both inseparable and get much attention from researchers. The company innovates to produce a new product or service or to make a profit. With technological improvements, market intensity and globalisation, innovation is the only way for companies to survive.

According to Aghion and Howitt (1992), innovation is the engine for growth. Innovation involves the process of identifying and utilising opportunities to produce new products, services and business practices (Subramanian and Youndt, 2005). OECD (2007) shows there are two innovation activities, namely technological innovation and non-technological innovation. Technological innovations include:

1    bringing technologically new products to markets or representing significant developments in technology

2    implementing new technologies or manufacturing procedures that have significantly improved.

In comparison, non-technological innovations include adjustment of organisational strategy, new packaging with texture and art design, marketing methods and others. In summary, innovation is a commercial invention. So, the company that emphasises

innovation is in harmony with companies that implement the strategy of prospectors within Miles and Snow's framework (1978).

Business model innovation provides a basis for companies to create value from ideas and develop innovative technologies (Sánchez-Montesinos et al., 2020). In their efforts to innovate, companies can choose to innovate products or even make further innovations by integrating innovation services that accompany core products (Seclen-Luna et al., 2020), better known as PSI – PSI/sertivisation (Bustinza et al., 2018).

Product innovation refers to company activities to respond to consumer needs by creating a new product offering. Meanwhile, PSI moves further by adding services to its products, and the service provides high value-added to customers (Seclen-Luna et al., 2020). Both innovation strategies (product innovation and PSI) are believed to improve company performance (Seclen-Luna et al., 2020). Moreover, in the current era of technology and information, several companies have embedded digitalisation in their products and services. Digitalisation or digital servitisation enables companies to create high entry barriers in their business, which becomes an isolation mechanism to maintain their competitive advantage (Sánchez-Montesinos et al., 2020). In essence, a company that focuses on exploiting the uniqueness of its resources will produce a competitive advantage that is difficult for its competitors to imitate in the long run (Bustinza et al., 2018).

Understanding the role of competition in the economic system is essential to understand business behaviour (Aboulnasr et al., 2008). Correspondingly, Cantner et al. (2008) argue that competition is an essential element of a mechanism necessary for economic change success. Vives (2008) states that competition affects the firm's effective market for given market size, the firm's residual demand, and its elasticity of residual demand. Many researchers try to model indicators to measure the tightness of competition. The most commonly used indicator is the Herfindahl-Hirschman index (HHI). HHI is the sum of the squares of the market share of the industry. HHI ranges from 0 to 1. The higher the HHI value indicates an increasingly concentrated market with fewer players who dominate market share. Here, the competition between companies in one industry is considered low. The lower the value of HHI shows an increasingly heterogeneous market with many companies competing strictly (high competition) to seize market share (Hung and Chen, 2011).

Based on the Schumpeterian view (Schumpeter, 1943), monopoly is the price that should be paid for innovation activities. According to Schumpeter, monopoly stimulates the existence of innovation activities. The anticipated power of monopoly occurs when innovators can enjoy the benefits of research and development through imitation prevention. The immediate effect of monopoly on innovation can be understood as follows: monopolist is a company that has many kinds of advantages. The high profits enjoyed by monopolists allow them to hire high-quality personnel and may be able to provide internal funding that enables them to respond quickly to events and weaken the company's reliance on expensive external funding (Geroski, 1990). The view of Schumpeter (1943) gains much attention from various academics. Many researchers are trying to prove these views. Bucci and Parello (2009) and Cantner et al. (2008) have arguments in line with Schumpeterian views.

On the other hand, many researchers have evidence that is inconsistent with Schumpeterian. Arrow (1972) and Gilbert (2006) state that monopolists who are not exposed to the competition - both actual and potential – have lower incentives to invest in R&D projects than firms in highly competitive industries. Further, Scherer (1980) states

that lack of competition leads to bureaucratic delays that hinder innovation. Competition is vital for growth because competition causes companies to innovate to survive in the business (Porter, 1990). According to this view, innovation is regarded as a major impetus for gaining success in a highly competitive environment.

## 2.3  *Business strategy, company performance and competition*

Every company will make all effort to perform and choose the most appropriate business strategy for them. The business strategy should be able to make the company survive and win the competition. To be successful, the business strategy must be able to provide an above-average return.

Companies engaged in the manufacturing industry face serious challenges. Products produced in the manufacturing industry are prone to commoditisation, where their products are easily imitated by competitors and eventually become generic and widely available. In the end, as competition increases, consumers will choose the product with the lowest price because they do not see any significant difference in value-added between products. This condition refers to the commodity trap. The commodity trap is very dangerous because it can destroy the entire market share of the company and can even lead to successful companies out of business. Therefore manufacturing companies must continue to innovate as the main way to avoid commodity traps and maintain a competitive advantage (Bustinza et al., 2019).

However, despite the importance of an innovation strategy, in reality, not all innovations can succeed. The innovation strategy taken by the company can also fail because the company has to adjust to new activities that can cause conflict in the organisation (França et al., 2017).

Many studies are conducted to find the best strategic typology for the company's performance. These studies have examined both strategies on the continuum end of prospectors and defenders: Bortoluzzi et al. (2020), Hambrick (1983), Hsu et al. (2018), Thomas and Ramaswamy (1996); others use three types of strategies, namely prospectors, defenders and analysers as a balancing strategy (Bentley et al., 2013; Zhang, 2016). Reactors are not widely researched because they are not considered real strategies. It just reacts to the competitors' strategy.

Among the studies, the results obtained are still inconsistent, which is the best strategy to improve its performance. According to Miles and Snow (1978), the three strategies (prospectors, defenders and analysers) produce the same performance in the long run. This argument is supported by the research of Snow and Hambrick (1980). However, these results are inconsistent with other studies, wherein in those studies, the performance depends on the choice of strategies.

The conclusion drawn from previous research is that business strategy affects company performance, although the results have not shown which strategy is best. Therefore, the first hypothesis to be tested is:

H1  Business strategy affects company performance.

A strategy should be an adaptive mechanism (Hambrick, 1983) and align business with its environment (Porter, 1980). There is a possibility of different results because the settings underlying the strategy choices are also different. Several quantitative studies at the firm level have not provided conclusive results regarding the success of innovation (Bustinza et al., 2018). Although there are generic formulas for business strategy, in

reality, the right business strategy can differ between companies and between industries. This argument is supported by Anwar and Hasnu (2016), who find that even though the strategy affects the company's performance, but its effect varies between industries. This view is in line with the I/O Model, which argues that factors outside the organisation will affect its ability to maintain its superior performance (Amit and Schoemaker, 1993). An effective business strategy requires a holistic system of organisation and interaction between the company and the market it serves, and the environment in which it operates (Vendrell-Herrero et al., 2018).

Therefore Bustinza et al. (2018) state the importance of contextuality in investigating the relationship between performance and innovation (in their research, especially PSI/sertivisation). We agree with that view. In this study, we examine the relationship between innovation and firm performance in the context of the manufacturing industry and analyse whether the level of competition between subsectors can moderate this relationship.

The level of competition greatly affects the success of the organisation. However, what strategy is suitable to be applied still inconclusive. Zhang's (2016) results support the Schumpeterian view. The results show that prospectors have better performance than defenders in an environment that supports innovation. According to Zhang (2016), environment that supports innovation is a market with a high level of concentration (tend to be monopolistic). This view is in line with studies that support the Schumpeterian view.

Based on the description related to innovation and competition level above, there is still no consistency in whether a market with a high level of competition or a concentrated market makes innovation strategies work. Prospectors are companies that promote innovation, while defenders are those that focused on efficiency. In other words, business strategy affects the company's performance, but the success of particular strategies in improving the company's performance depends on the level of competition where the company is operated. Therefore, the hypothesis to be tested in this study are:

H2  The level of industrial competition moderates the relationship between business strategy and company performance.

Figure 1 depicts the framework of this study. We investigate how business strategy – whether prospectors or defenders – affects business performance with industrial competition as a moderating variable. We use size and leverage as controlling variables.

**Figure 1**    Framework of the study
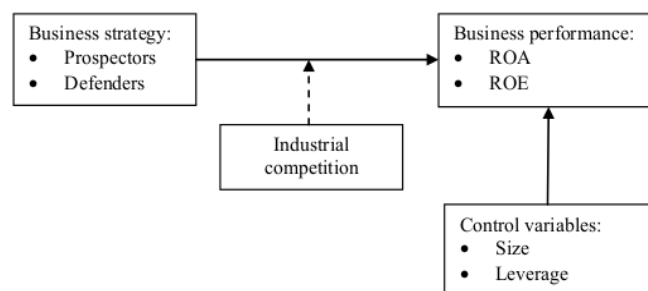
## 3    Data and methodology

### 3.1    Data

The samples used in this study are all companies in the manufacturing industry listed on the Indonesia Stock Exchange period 2011–2016. The manufacturing industry is chosen as the research object because the manufacturing industry has a complex process that can describe the implementation of a complete business strategy. Also, the manufacturing industry is believed to have higher innovation activities than other industry sectors, evidenced by higher R&D activities. This phenomenon is evident from the number of patents obtained by the manufacturing industry (OECD, 2007).

The research period used is 2011 to 2013, but the data required for measuring company performance is from t + 1 to t + 3, so the data needed is from 2011 to 2016. The year 2011 was chosen as the beginning of the study period because after the issuance of PP No. 57/2010, it is expected that the business climate and competition in Indonesia are healthier and more transparent.

### 3.2    Univariate analysis

This study provides an independent sample t-test to describe the company's performance between prospectors and defenders across competition levels from year to year ($t + 1$, $t + 2$ and $t + 3$). First, samples will be grouped according to their business strategy (prospectors or defenders) and based on the level of competition (high, medium and low competition). An independent sample t-test is then performed to test the performance (ROA and ROE) from each group.

### 3.3    Multivariate analysis

The first and third hypotheses were tested using multiple linear regression using the following model:

$$PERF_{i,t} = \propto + \beta_1 STRAT_{i,t} + \beta_2 HHI_{i,t} + \beta_3 STRAT * HHI_{i,t}$$
$$+ \beta_4 LEV_{i,t-1} + \beta_5 SIZE_{i,t-1} + \varepsilon_{i,t}$$

where

PERF      company performance measured using accounting variables (ROA, ROE)

STRAT     choice of company strategy using dummy variable; prospectors = 1 and defenders = 0

HHI       HHI which shows the level of competition

LEV       Corporate debt level, obtained from total debt divided by total assets

SIZE      company size obtained from natural logarithm value of total assets

i         company i

t         year t.

$H_1$ will be accepted if $\beta_1$ is significant and $H_2$ will be accepted if $\beta_3$ is significant.

### 3.4 Company performance

The company's performance variables are accounting-based performance measures that indicate the profitability of the firm. According to Zhang (2016), the standard of accounting-based performance measures commonly used is ROA and ROE. ROA indicates how efficiently the company can use its assets to generate profits and is calculated as the ratio of net income to total assets.

$$ROA_{i,t} = \frac{Net\ Income_{i,t}}{Total\ Assets_{i,t}}$$

ROE measures the rate of return to shareholders in accounting and is calculated as the ratio of net income to total equity.

$$ROE_{i,t} = \frac{Net\ Income_{i,t}}{Total\ Equity_{i,t}}$$

### 3.5 Business strategy variables

Business strategy at the current period (year t) affects the performance in the future. Therefore, this study's performance measurements are measured at $t + 1$, $t + 2$ to $t + 3$. Business strategy is categorised based on the summation of 12 business strategy components that are adopted from Jermias (2008), Higgins et al. (2015) and Bentley et al. (2013). These components are characteristics that describe a company's business strategy, which is consist of:

1 $\quad Premium\ Price\ Capability = \dfrac{Gross\ Margin}{Sales}$

2 $\quad RnD\ Intens = \dfrac{RnD\ Expense}{Sales}$

3 $\quad Sales\ Effort = \dfrac{Selling,\ general\ and\ Admin\ expense}{Sales}$

4 $\quad Employee\ Intensity = \dfrac{Number\ of\ Employee}{Sales}$

5 $\quad Marketing\ Effort = \dfrac{Advertising\ expense}{Sales}$

6 $\quad Asset\ Utilisation\ efficiency = \dfrac{Sales}{Total\ Asset}$

7 $\quad Capital\ Intensity = \dfrac{PPE}{Total\ Asset}$

8 $\quad Capital\ and\ MV\ ratio = \dfrac{Capital\ Expenditure}{Market\ VAlue}$

9     *Capital and Asset Ratio* $= \dfrac{Capital\ Expenditure}{Asset}$

10    *Sales Growth* $= \dfrac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$

11    *MTB* $= \dfrac{Market\ Value}{Book\ VAlue}$

12    *Employee Fluctuation* $= \dfrac{Employee_t - Employee_{t-1}}{Employee_{t-1}}$

The first step is to calculate the value of each ratio of each observation for each year and each industry. Then the ratio is ranked into quintiles. For each observation, the highest quintile variables were scored 5, and the second-highest group given a score of 4 and so on down to the lowest rank. This way of assessment is provided for all variables, except asset utilisation efficiency and capital intensity. The two components are reversed. The next step is to sum the rankings' scores so that each observation has a minimum value of 12 and a maximum value of 60. For observations whose value above the median is categorised as prospectors and given dummy = 1, observations equal or below the median are categorised as defenders and given dummy = 0.

### 3.6   Variable of industry competition

The tightness of industrial competition is measured by market concentration. The higher level of industry concentration shows that the industry is more controlled by fewer companies or more monopolist. The lower level of industry concentration indicates more market players, and market share is divided into more competitive companies or markets. Measurement of industry concentration level using HHI with the following calculation (Jermias, 2008):

$$HHI = \sum_{I=1}^{n} \left( market\ share_i \right)^2$$

HHI is calculated from the sum of the squares of the market share in an industry. In that formula, i denote an individual firm in a particular industry and n denote the number of firms in an industry. Market share is measured by the ratio of sales of each firm in a particular industry to all companies' total sales in the industry. This calculation is done each year, so the value of HHI of each industry will be different every year.

### 3.7   Control variables

In this study, the control variables used are firm size and leverage. Firm size is calculated by the natural logarithm of beginning total assets. Previous studies have suggested that firm size will affect the structure and decision-making capabilities that will ultimately affect its performance (Ramaswamy, 2001; Frank and Goyal, 2003). Leverage is measured using a debt ratio measured by beginning total debt to beginning total assets of the company. According to Jensen and Meckling (1976), the level of debt in the firm's capital structure affects managers' choice in their operational activities, and this activity

will ultimately affect the company's performance. These control variables use the period's initial value, so they are not affected by performance this year.

## 4 Analysis and discussion

### 4.1 Empirical results

Based on the predefined sample criterion, this study uses panel data where the total observation is 297 firm-year with a descriptive statistic, as shown in Table 1. Table 1 shows that the average value of HHI exhibits a fairly low number of about 21.45% means that many companies are included in the category of medium or even high competition. The maximum value of $LEV_{t-1}$ exceeds 1, meaning that there is a company (or more) whose total debt exceeds its asset. The $LEV_{t-1}$ value of the overall sample is approximately 56.88%. This value is quite high, meaning that on average many firms have a proportion of debt more than half of its total assets. In terms of corporate accounting performance (ROA and ROE), it appears that data from the sample do not differ much, except for $ROE_{t+3}$.

**Table 1** Descriptive statistic

| Variable | N | Minimum | Maximum | Mean | Std. deviation |
|---|---|---|---|---|---|
| STRAT | 297 | 0.000 | 1,000 | 0.495 | 0.501 |
| HHI | 297 | 0.090 | 0.574 | 0.215 | 0.182 |
| STRATXHHI | 297 | 0.000 | 0.574 | 0.121 | 0.189 |
| LEVt-1 | 297 | 0.040 | 3,210 | 0.569 | 0.503 |
| SIZEt-1 | 297 | 25.083 | 32,837 | 27,978 | 1,580 |
| ROAt+1 | 297 | −34.594 | 40,377 | 6,020 | 10,363 |
| ROAt+2 | 297 | −34.594 | 40.14 | 4,746 | 10,097 |
| ROAt+3 | 297 | −29.070 | 40,184 | 4,056 | 9,577 |
| ROEt+1 | 297 | −161.460 | 324,631 | 13,613 | 34,015 |
| ROEt+2 | 297 | −118.166 | 163,132 | 11,364 | 25,625 |
| ROEt+3 | 297 | −124.116 | 2,473.090 | 18,588 | 145,039 |
| Valid N (listwise) | 297 | | | | |

| Observations: | N (firm-year) | Prospectors (firm-year) | Defenders (firm-year) |
|---|---|---|---|
| Basic industry | 135 | 65 | 70 |
| Miscellaneous industry | 87 | 42 | 45 |
| Consumer goods industry | 75 | 40 | 35 |

From Table 1, it can be seen that the basic industry dominates the research sample. Of the 135 firm years included in the basic industry, 65 firm years were included in the prospectors category or around 48%. The largest proportion of prospectors is in the consumer goods industry, which is 53% of the sample categorised in the consumer goods industry. This condition reflects the manufacturing industry sector as a whole during the period of the business strategy under study. Our research objects consist of all

manufacturing companies listed on the IDX throughout the research period. We exclude companies that:

1   just listed in the IDX in the middle of the investigation period

2   are delisted from IDX in the middle of the investigation period

3   do not have the complete data required in this study.

Table 2 shows the level of HHI index that is the proxy for industrial competition. The lower the HHI value indicates a higher level of competition. Table 2 shows that from year to year, the level of competition in manufacturing sub-sectors is the same, where the basic industry is classified as a high-competition industry, followed by consumer goods industry and miscellaneous industry belongs to low-competition.

**Table 2**     Competition level of sub-sector manufacturing industry

| Year | Sub sector | HHI_rank | Level of industrial competition |
|------|-----------|----------|--------------------------------|
| 2011 | Basic industry | 0.089 | High-level of competition |
|      | Consumer goods industry | 0.134 | Medium-level of competition |
|      | Miscellaneous industry | 0.558 | Low-level of competition |
| 2012 | Basic industry | 0.099 | High-level of competition |
|      | Consumer goods industry | 0.138 | Medium-level of competition |
|      | Miscellaneous industry | 0.574 | Low-level of competition |
| 2013 | Basic industry | 0.106 | High-level of competition |
|      | Consumer goods industry | 0.158 | Medium-level of competition |
|      | Miscellaneous industry | 0.565 | Low-level of competition |

Table 3 shows the Spearman correlation between variables. In Table 3, it can be seen that current performance is positively correlated with performance in the next period. This condition applies to both ROA and ROE. Business strategy is positively correlated with ROA, meaning that manufacturing companies that choose the prospectors strategy have a better ROA than defenders. The level of industrial competition HHI negatively correlates with ROA, meaning that the more competition in a manufacturing industry sub-sector, the higher the ROA. Leverage (DAR) negatively correlates with ROA; if DAR increases, ROA tends to decrease. Defenders seem to prefer funding from debt. DAR also has a positive correlation with the level of industry competition. The lower the level of competition (higher HHI) in the manufacturing industry, the higher the use of debt.

Table 4 exhibits the performance between prospectors and defenders based on the level of industry competition (high, medium and low).

Based on Table 4 of panel A, it appears that, overall, prospectors' ROA is significantly higher than defenders' and the condition is consistent for three consecutive years and significant in low and high competition. However, these results also indicate that the level of industry competition does not affect the relationship between business strategy and performance. This study shows that prospectors have superior performance in terms of ROA compared with defenders. Table 4 Panels B exhibits performance measured by ROE does not differ significantly between prospectors and defenders at any level of competition (except for $ROE_{t+3}$).

**Table 3** Spearman correlation matrix

| | $ROA_{t+1}$ | $ROA_{t+2}$ | $ROA_{t+3}$ | $ROE_{t+1}$ | $ROE_{t+2}$ | $ROE_{t+3}$ | $STRAT$ | $HHI$ | $STRAT*HHI$ | $DAR_{t-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $ROA_{t+2}$ | 0.796** | | | | | | | | | |
| $ROA_{t+3}$ | 0.699** | 0.711** | | | | | | | | |
| $ROE_{t+1}$ | 0.781** | 0.634** | 0.526** | | | | | | | |
| $ROE_{t+2}$ | 0.588** | 0.751** | 0.541** | 0.697** | | | | | | |
| $ROE_{t+3}$ | 0.430** | 0.493** | 0.727** | 0.541** | 0.589** | | | | | |
| $STRAT$ | 0.331** | 0.285** | 0.231** | 0.233** | 0.180** | 0.130* | | | | |
| $HHI$ | −0.088 | −0.085 | −0.037 | −0.028 | −0.006 | 0.019 | 0.005 | | | |
| $STRAT*HHI$ | 0.255** | 0.221** | 0.178** | 0.168** | 0.135** | 0.086 | 0.929** | 0.263** | | |
| $DAR_{t-1}$ | −0.458** | −0.405** | −0.329** | −0.146* | −0.105 | −0.058 | −0.178** | 0.150** | −0.122* | |
| $SIZE_{t-1}$ | 0.027 | 0.015 | 0.070 | 0.114* | 0.091 | 0.133* | 0.031 | −0.007 | 0.035 | 0.110 |

Notes: **Correlation is significant at the 0.05 level (2-tailed). *Correlation is significant at the 0.1 level (2-tailed).

**Table 4**     Performance of prospectors and defenders based on the level of industrial competition

| | STRAT | Low-level of competition | | Medium-level of competition | | High-level of competition | |
|---|---|---|---|---|---|---|---|
| | | Mean | t-value | Mean | t-value | Mean | t-value |
| *Panel A: ROA* | | | | | | | |
| $ROA_{t+1}$ | Prospector | 5.626 | 3.516*** | 11.041 | −0.552 | 9.237 | 6.165 *** |
| | Defender | −0.661 | | 12.661 | | 1.375 | |
| $ROA_{t+2}$ | Prospector | 4.339 | 3.702*** | 10.310 | −0.520 | 7.202 | 5.737 *** |
| | Defender | −1.771 | | 11.813 | | 0.185 | |
| $ROA_{t+3}$ | Prospector | 3.464 | 2.964*** | 9.722 | −0.505 | 5.141 | 4.620 *** |
| | Defender | −1.864 | | 11.128 | | 0.437 | |
| *Panel B: ROE* | | | | | | | |
| $ROA_{t+1}$ | Prospector | 6.802 | −0.744 | 23.584 | 0.426 | 14.677 | 1.188 |
| | Defender | 12.462 | | 20.228 | | 8.445 | |
| $ROA_{t+2}$ | Prospector | 7.581 | −0.831 | 24.415 | 0.773 | 10.512 | 2.926 |
| | Defender | 12.197 | | 18.466 | | 2.879 | |
| $ROA_{t+3}$ | Prospector | 1.698 | −1.857** | 26.388 | 1.405 | 46.306 | 1.149 |
| | Defender | 13.452 | | 16.841 | | 2.701 | |
| | Defender | 0.066 | | −0.016 | | 1.085 | |

Note: *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

**Table 5** Multiple regression test results for $H_1$ and $H_2$

| Variable | $ROA_{t+1}$ | | $ROA_{t+2}$ | | $ROA_{t+3}$ | |
|---|---|---|---|---|---|---|
| | Coef. | t-value | Coef. | t-value | Coef. | t-value |
| Constant | 3.447 | 0.344 | 2.449 | 0.247 | -5.952 | -0.614 |
| STRAT | 4.464 | 2.598*** | 3.885 | 2.286** | 2.473 | 1.489 |
| HHI | -5.432 | -1.402 | -6.457 | -1.685* | -8.197 | -2.189** |
| STRAT*HHI | -0.692 | -0.129 | 0.742 | 0.140 | 2.678 | 0.516 |
| $SIZE_{t-1}$ | 0.181 | 0.515 | 0.165 | 0.475 | 0.429 | 1.261 |
| $LEV_{t-1}$ | -5.772 | -4.904*** | -4.840 | -4.159*** | -2.677 | -2.354** |
| F-test | 12.573*** | | 10.507*** | | 6.508*** | |
| Adj. $R^2$ | 0.164 | | 0.138 | | 0.085 | |

| Variable | $ROE_{t+1}$ | | $ROE_{t+2}$ | | $ROE_{t+3}$ | |
|---|---|---|---|---|---|---|
| | Coef. | t-value | Coef. | t-value | Coef. | t-value |
| Constant | -68.893 | -1.925 | -56.340 | -2.100** | 118.366 | 0.770 |
| STRAT | 9.003 | 1.468 | 11.266 | 2.451** | 42.217 | 1.602 |
| HHI | 4.077 | 0.295 | 13.623 | 1.314 | 11.999 | 0.202 |
| STRAT*HHI | -28.364 | -1.482 | -30.258 | -2.108** | -92.937 | -1.130 |
| $SIZE_{t-1}$ | 2.875 | 2.290 | 2.234 | 2.373** | -4.020 | -0.745 |
| $LEV_{t-1}$ | 0.047 | 0.011 | -0.133 | -0.042 | 0.092 | 0.005 |
| F-test | 0.133 | | 2.279** | | 0.775 | |
| Adj. $R^2$ | 0.012 | | 0.021 | | -0.004 | |

Note: Two-tailed test. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

**Table 6** Regression for prospectors and defenders based on intangible assets

*Panel A: for firms with intangible assets*

| Variable | ROAt+1 | | ROAt+2 | | ROAt+3 | |
|---|---|---|---|---|---|---|
| | Coef. | t-value | Coef. | t-value | Coef. | t-value |
| Constant | −16.305 | −0.832 | −11.925 | −0.595 | −10.358 | −0.517 |
| STRAT | 11.911 | 3.071*** | 12.549 | 3.163*** | 9.600 | 2.448** |
| HHI | 34.486 | 1.949** | 45.194 | 2.456** | 34.685 | 1.895* |
| STRAT*HHI | −46.455 | −2.369** | −56.697 | −2.811*** | −45.115 | −2.267** |
| SIZE$_{t-1}$ | 0.891 | 1.338*** | 0.668 | 0.978 | 0.652 | 0.951 |
| LEV$_{t-1}$ | −14.036 | −4.038 | −14.849 | −4.125*** | −14.375 | −3.757*** |
| F-test | 7.836*** | | 6.468*** | | 6.508*** | |
| Adj. R$^2$ | 0.305 | | 0.255 | | 0.085 | |
| n | 79 | | 81 | | 81 | |

*Panel B: For firms without intangible assets*

| Variable | ROAt+1 | | ROAt+2 | | ROAt+3 | |
|---|---|---|---|---|---|---|
| | Coef. | t-value | Coef. | t-value | Coef. | t-value |
| Constant | 14.431 | 1.192 | 12.119 | 1.054 | −0.092 | −0.008 |
| STRAT | 2.928 | 1.493 | 1.675 | 0.894 | −.044 | −0.024 |
| HHI | −5.856 | −1.483 | −7.629 | −2.039** | −8.839 | −2.477** |
| STRAT*HHI | 2.021 | 0.349 | 5.440 | 0.988 | 7.528 | 1.430 |
| SIZE$_{t-1}$ | −0.250 | −0.582 | −.214 | −.526 | 0.174 | 0.449 |
| LEV$_{t-1}$ | −4.941 | −3.565*** | −4.062 | −3.084*** | −1.439 | −1.204 |
| F-test | 5.818*** | | 5.047*** | | 2.568** | |
| Adj. R$^2$ | 0.100 | | 0.086 | | 0.035 | |
| n | 218 | | 216 | | 216 | |

Note: Two-tailed test. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

This result is not in line with Zhang's (2016) study, which finds that firms tend to change strategy from prospectors (defenders) to defenders (prospectors) as the level of competition is higher (low). Zhang's (2016) results confirm the view of Schumpeterian (1943), which states that prospectors have better performance if the market is increasingly monopolistic (low competition level). The difference in this result could be due to the difference in the research object. In Indonesia, the presence of a business competition supervisory committee indicates that KPPU monitors the level of competition to prevent monopolistic practices. Perhaps this condition causes the level of business competition cannot moderate the relationship between business strategy and performance.

From Table 4, it is concluded that in the manufacturing industry, prospectors outperform defenders in terms of ROA. This condition occurs in high competition environments; in this case, it refers to basic industry sub-sector and low competition environments: the miscellaneous industry sub-sector. At the medium level of competition, the consumer goods industry, prospectors and defenders do not produce significantly different performance. This finding is related to the nature of the consumer goods industry, which is directly related to end-users. Its products are always needed so that the flow of demand from consumers will always be relatively stable.

Table 5 shows the results of $H_1$ and $H_2$ using multiple regression. Table 5 panel A shows that STRAT has a significant positive effect on ROA and this is consistent for the period $t + 1$ and $t + 2$. Only $t + 3$ indicates that STRAT has no significant effect on ROA. As for ROE (Table 5 panel B), the STRAT variable has a significant positive effect on $ROE_{t+2}$.

Overall, for manufacturing firms, the test shows that corporate strategy choice affects accounting performance, especially during the next two years. This result supports H1. These test results show the positive and significant STRAT coefficients, which indicate that the prospectors have better performance than defenders in terms of accounting performance, especially ROA. This finding is in line with Parnell's (2010) research, which states that prospectors performance is better than other types of strategy, where prospectors have slightly better performance than defenders and analysers and much better than reactors.

Table 5 shows that the industrial competition tightness (HHI) has a significant negative effect only on $ROA_{t+2}$ and $ROA_{t+3}$. It means that the higher level of competition in the industry (the lower the HHI value), the company's performance measured by ROA will be better.

However, the level of industrial competition has no significant effect on ROE. The industry competition level only affects the company's performance internally (ROA) but does not affect profitability from shareholders' performance point of view (ROE). Overall, the level of industry competition does not affect the performance of the company. This result is in line with Jermias (2007). It may be due to the relationship between the level of industrial competition and the company's performance is not purely linear. In their study, Aghion et al. (2005) found that the relationship between performance and corporate strategy is U inverted. The higher the competition, the higher the performance is — until, at a certain point, increased competition will decrease performance. Aghion et al. (2005) argue that increased competition will allow companies to integrate by allowing unintegrated suppliers to enjoy an innovation surplus after this optimum point.

HHI is not capable of moderating the relationship between business strategy and company performance. Table 5 shows that the STRAT*HHI variable has no significant effect on performance (except $ROE_{t+2}$). This finding does not support $H_2$.

Companies' size has no significant effect on company performance. Leverage that indicates corporate funding structure shows a significant negative effect on company performance. This finding is in line with Jensen and Meckling (1976) whereas leverage increase; the agency cost also increases. Balakhrishnan and Fox (1993) suggesting that higher debt increases managers' tendency to avoid risk and reduce managers' desire to invest in risky but profitable projects, and there are still many studies that show the negative effect of leverage on performance (Nisha and Ghosh, 2018; Pandey and Sahu, 2017).

The findings in Table 5 show that prospectors are able to produce better profitability than defenders. This result is inseparable from the characteristics of the manufacturing industry. In the manufacturing industry, which is primarily industrial (Barth et al., 2019), production is mass. Basically, the manufacturing industry is very risky because companies must assume that the market is large enough for a product to produce on a large scale. Therefore, innovation is needed by the manufacturing industry so that their products can stand out from the crowd.

### 4.2   Additional analysis

We also perform additional analysis to gain a broader understanding of the impact of business strategy choices on business performance. In this additional analysis, we analyse specifically companies that have intangible assets.

Currently, the manufacturing industry has developed from product-oriented to PSI/sertivisation. Although, according to the categorisation of Barth et al. (2019), the manufacturing industry is primarily industrial, it seems that the manufacturing industry has transformed into an industry full of innovation. The transformation from the traditional manufacturing industry to PSI/sertivisation requires many changes, and innovations become important keywords for today's manufacturing industry. Based on the research of Vendrell-Herrero et al. (2020), the IT and R&D team structure plays an important role in exploring the company's innovation capabilities. In line with this research, many studies have stated the importance of manufacturing technologies in supporting PSI's success, for example, digital technologies (Sánchez-Montesinos et al., 2020; Calle et al., 2020) and cloud computing (Muhammad, 2020).

Prospector is thick with the characteristic of innovation. Companies that perform many innovation activities are included in the prospectors category. However, not all innovations have been successful. Innovations are very close to intangible assets. Only innovation activities that are successful and have probable future economic benefits will be capitalised on. IAS 38 provides fairly strict criteria regarding the recognition of R&D expenditures that may be recognised as intangible assets. Therefore, in this study, we divide the sample with intangible assets, and the sample that do not have intangible assets and performs regression for each group. Companies that have intangible assets can be said to commit to innovation activities.

Table 6 panel A shows the effect of business strategy and the level of industry competition on ROA for the sample having intangible assets. The results show that prospectors have a positive and statistically significant effect on company performance. This means that prospectors produce better performance than defenders. The HHI shows

that the more concentrated the industry, the better the company's performance. This condition indicates that the lower the competition level, the easier it will be for the company to profit. The interesting finding is the STRATXHHI variable which shows a negative and significant coefficient. These results indicate that HHI can moderate the relationship between business strategy and company performance as proxied by ROA for the companies with intangible assets. For companies with intangible assets, choosing a strategy to innovate (referring to prospectors) will result in better performance in an environment with a high competition level. This condition is valid for three years ($t + 1$, $t + 2$ and $t + 3$).

Table 6 Panel B shows the results for samples having no intangible assets. The results in this sample indicate that the business strategy and industry competition level cannot explain the company's performance as proxied by ROA. The level of firm leverage harms ROA for all samples. This result means that the higher the corporate debt level will burden the company's performance because the financial risk will also be higher.

We also perform the same test with the ROE as a performance variable (untabulated). The results show that the prospectors provides a higher ROE than the defenders for companies with intangible assets. Still, the goodness of fit of the model is very modest (F test is significant at the level of 10%) for $ROE_{t+1}$ and $ROE_{t+2}$. The other ROE test results indicate that the F-test is not significant, so further investigation is needed regarding the variables that affect ROE.

Table 6 demonstrates that for companies committed to innovation, the prospectors strategy has a performance advantage over defenders, especially in an increasingly competitive environment. In the manufacturing industry, where consumers' needs and tastes are always changing, products are mass-produced and easily imitated (Anwar and Hasnu, 2016), especially coupled with intense industrial competition, innovation is needed to excel in competition and also a way to prevent companies from commodity trap (Bustinza et al., 2019). However, on the other hand, innovation is costly. The Federal Reserve and global economic organisations state that these expenditures are strategic investments for the company's long-term growth and the economy as a whole (McKinney, 2017). Therefore, only companies committed to innovation and managing them into successful innovations will stand out in this industry.

## 5 Conclusions

Of all the tests conducted, business strategy and industry competition can explain or affect the company's performance in the future based on profitability measured by ROA. However, it turns out that business strategy and industry competition cannot drive profitability from investors' point of view (measured by ROE). Overall, the level of industry competition has no significant impact on performance (except for ROA), and the level of industry competition is also unable to moderate the relationship between business strategy and performance.

This study's results bring implications for the manufacturing companies. Prospectors business strategy is better than defenders in terms of accounting performance as measured by ROA and ROE, especially during the next two years. This result implies that the company's strategy should be evaluated at least every two years. After two years, the same business strategy will not be able to affect the company's performance effectively. Another important thing to note is that the strategy applied by a company should be able

to generate profits because the market responds to the profitability rather than respond directly to the strategy.

An interesting finding in this study is that companies committed to innovation and choose the prospectors strategy will have a better performance than defenders. This success will be more visible in an environment with a high level of industrial competition. In a manufacturing industry characterised by mass production, facing the fast-changing tastes and needs of end-users and products that competitors easily imitate, it is not surprising that innovation is essential for manufacturing companies to obtain above abnormal returns. Moreover, currently, the manufacturing industry has moved towards PSI/servitisation, which requires a lot of innovation commitment.

This study has limitations which also serve as recommendations for the development of further research. First, this study places the choice of innovation strategy in the context of industrial competition. Future research may consider including elements of entrepreneurial characteristics, social norms on entrepreneurial identity (Jones et al., 2019), and also the role of IT (Calle et al., 2020; Vendrell-Herrero et al., 2020), which will affect the innovation strategy's decision. Second, this study only compares prospectors and defenders. Future studies can add other business strategies, such as analyser or hybrid strategy. Third, this study is a case study that focuses on companies in the manufacturing industry in Indonesia. Further research can broaden the research object by comparing business strategies between industries and stock exchanges in several countries.

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