Creating Competitive Advantage in the Turbulent Business Environment: Lesson Learned from Indonesia Telecommunication Industry

Menciptakan Keunggulan Bersaing dalam Lingkungan Bisnis yang Bergejolak: Pelajaran dari Industri Telekomunikasi Indonesia

Muhammad Imam Nashiruddin[1]

[1]*Center for Regulation & Management of Telecommunication (CRMT), School of Electrical Engineering, Telkom University*
[1]*Jl. Telekomunikasi No. 1, Terusan Buah Batu, Bandung, 40257, West Java, Indonesia*
email: [1]imamnashir@telkomuniversity.ac.id

ABSTRAK

Tujuan penelitian ini untuk mendapatkan gambaran mengenai keunggulan bersaing penyelenggara telekomunikasi dan mengeksplorasi bagaimana menciptakan keunggulan bersaing yang superior dalam lingkungan bisnis yang bergejolak. Penelitian melibatkan pimpinan unit bisnis penyelenggara telekomunikasi di Indonesia sebagai responden penelitian dengan metode descriptive survey *dan* explanatory survey *menggunakan* Partial Least Square-Path Modelling (PLS-PM). *Dari analisis deskriptif, diperoleh bahwa keunggulan bersaing penyelenggara telekomunikasi di Indonesia termasuk dalam kategori baik dan lebih banyak dibangun melalui efisiensi produk, terutama efisiensi yang lebih tinggi dalam menghasilkan produk atau layanan. Namun demikian, hasil penelitian menunjukkan bahwa kecepatan respon pasar memiliki kontribusi yang lebih dominan dalam menciptakan keunggulan bersaing yang superior pada lingkungan bisnis yang bergejolak. Untuk mengatasi masalah ini, penyelenggara telekomunikasi di Indonesia perlu meningkatkan kemampuannya, terutama dalam menciptakan respon yang lebih cepat untuk memasuki pasar-pasar baru serta menghasilkan produk atau layanan dengan biaya yang lebih rendah.*

ABSTRACT

This study aims to describe the competitive advantage of the telecommunications provider and explore how to create a superior competitive advantage in the turbulent business environment. The study involved many leaders of business units of telecommunications operators in Indonesia as research respondents. The research uses descriptive survey and explanatory survey using Partial Least Square-Path Modeling (PLS-PM). From the descriptive analysis, it is found that the competitive advantage of telecommunications operators in Indonesia belongs to the excellent category, and was built more through product cost-efficiency, especially higher efficiency in producing products or services. However, the results of the study show that market responsiveness turned out to have a more dominant contribution in creating a superior competitive advantage in a turbulent business environment. Thus, the competitive advantage is still not optimal. To solve this problem, the telecommunications provider in Indonesia needs to increase the ability to quickly enter new markets and produce products or services at a lower cost.

1. Introduction

The changing business environment continuously sparks and spurs turbulence and complexity. Most businesses and companies that tend to repeat the success of the traditional ways by relying on sources of

competitive advantage that they get up earlier, are struck by the fact that the sources of competitive advantage are no longer able to provide performance above average. In other words, the source of competitiveness has been eroded by the turbulence environment (Irbansyah, 2011).

Research from Wu (2010) shows that in the turbulent environment, only one or two resources that significantly affect the competitive advantage. Pavlou & Sawy (2011) also confirm that the environment turbulence negatively affects competitive advantage.

Earlier studies have demonstrated that the accelerated changes in technology, markets, regulations, and hyper-competition have made the business environment become uncertain and unpredictable (Hosseini & Sheikhi, 2012), causing turbulence environment that can lead to competitive advantage becomes eroded (Irbansyah, 2011) and difficult to maintain (D'Aveni, Dagnino, & Smith, 2010).

One of the industries that are widely recognized turbulence environment is the telecommunications industry, which is characterized by the rapid changes and unpredictable in terms of technology, market, competition, and regulation, which is often referred to as high-velocity industry (Eisenhardt, 1989). Telecommunication industry is an important sector that supports the economic growth in many countries, including Indonesia.

Following the Law of the Republic of Indonesia Number 36 of 1999 regarding Telecommunications, the operation of telecommunication network and/or the operation of telecommunication services in Indonesia is provided by (i) network provider, consists of fixed network provider (local circuit-switch and packet-switch, long distance, international, and closed network) and mobile network provider (mobile cellular, mobile satellite, and mobile terrestrial), and (ii) service provider, such as basic telephony service (voice), value-added services (premium call, call center, calling card, and content service) and multimedia services (internet access, network access point or gateway, voice over internet protocol, and data communication system). The Indonesia telecommunication industry consists of 74% service provider and 24% network provider (Kemkominfo, 2017).

A company has a competitive advantage over its rivals when its profitability is higher than the average profitability of all companies in its industry. It has a sustained competitive advantage when it can maintain above-average profitability over many years. The same thing was stated by (Day & Wensley, 1988) through his research which proved that superior business unit performance is the result of its competitive advantage. Various other studies also show a positive relationship between competitive advantage and business unit performance (Fahy, 2000; Ma, 2004).

However, competitive advantage is an interesting topic, and many researchers explore more of its strategic management as there are still many different concepts about competitive advantage and how to measure it. This paper aims to understand how the company is creating a competitive advantage in the turbulent business environment, i.e., the telecommunication industry. The contributions of our work and its results can be developed into a strategic perspective for operators and government or regulator on how to create competitive advantage in the turbulent business environment for the telecommunications industry.

This paper is structured into five sections. The first section is Introduction, the second is the Literature Review, the third is Method, Results and Discussion is presented in section 4, and finally, the Conclusion is presented in section 5.

2. Literature Review

2.1. *The Current State of Indonesia Telecommunication Industry*

In general, the development of telecommunications operations in Indonesia can be divided into four periods namely (1) State Monopoly Period (Law Number 5 of 1964), (2) Organizing Agency's Duopoly Period (Law Number 3 of 1989), (3) Competition Period (Law Number 36 of 1999), and (4) Towards Telematics Convergence Period. At present, discussion between the government and the parliament are ongoing to update the Law Number 36 of 1999.

Although the Indonesian government has issued hundreds of licenses for the operationalization of telecommunications following the framework of Law Number 36 of 1999 above, the telecommunications industry in Indonesia is currently dominated by the mobile broadband (cellular) and fixed broadband industries. PT Telekomunikasi Indonesia, Tbk. (Telkom) is the most significant player in the fixed broadband industry and also the dominant player in the mobile broadband industry through its subsidiary, PT Telekomunikasi Selular (Telkomsel).

Indonesia mobile broadband industry growth rate turned negative throughout the year 2018. Telkomsel, the market leader, has reported a negative year on year growth for the first time in 1Q18. Indonesian data yields also recorded steep declines, with revenue per MB dropping ~21% q-o-q on average over 1Q/2Q18, driven by intense competition in the industry in the prepaid SIM registration era (Mittal, 2018). Currently, Indonesia is facing problems where data traffic, including OTT, dominates the telecommunications services which lead to revenue declining. On the other hand, the cost of network maintenance tends to increase (Arif, Perdana, Hasan, & Nashiruddin, 2018).

Voice and SMS declined to accelerate in FY 2019. The mobile sector's exposure to legacy voice and SMS services remains high at ~40%. The most vulnerable companies are the Telkomsel with ~42% exposure to legacy voice and SMS revenues, and the Indosat with ~28% gross top-line exposure to legacy voice and SMS. XL Axiata, having gone through a painful transformation program in FY16, remains below industry averages, with legacy revenues contributing only 20% of XL Axiata's top line. Legacy services will continue contracting over 2019 fuelled by growing coverage of 4G services, the proliferation of cheap Chinese smartphones, acceleration adoption of Over-The-Top (OTT) services and cheaper data services. Pricing of legacy services also remains high, especially in regions outside Java where 3G/4G coverage remains poor, further inducing subscribers to switch to OTT services (Mittal, 2018).

On the other hand, Indonesia fixed broadband industry starts to grow. High-speed fixed broadband penetration in Indonesia has doubled in the last 15 months. It is estimated that high-speed fixed broadband penetration (connections over 5 Mbps) in Indonesia has doubled over the past year from 4% household penetration in 1Q17 to 8% household penetration as of 3Q18. It was primarily driven by aggressive expansion by the Telkom, which added nearly 2.7m subscribers over the same period. All major fixed broadband players are aggressively expanding their coverage regions to capitalize on the growing appetite for high-speed data among the expanding middle-income class in Indonesia. Extrapolating the growth in high-speed broadband penetration over the past year, coupled with the growing interest in the segment by incumbents and new operators like the XL Axiata and the Indosat, it is expected to see penetration of high-speed broadband services rising to at least 20% over the next three years, adding ~9m new households to the high-speed broadband segment (Mittal, 2018).

Research by Nashiruddin (2018) shows similarity with other countries in the world that the telecommunications industry in Indonesia nowadays experiences high turbulent business environment, especially caused by technological turbulence and market turbulence. To deal with the turbulent business environment, Indonesia telecommunication providers should improve their understanding on technological turbulence, mainly to the intensity of emergence of new products or services as results of technological breakthrough, and also market turbulence, mainly related with searching of new product and changes in customer's preferences.

2.2. *Competitive Advantage Definition*

The essence of strategic management is achieving and maintaining competitive advantage compared to competitors. A company is considered auspicious in achieving competitive advantage if the company can obtain profits above the average industry profits (Walker & Madsen, 2016). Wiggins & Ruefli (2002) also

agree, namely profits above the average industry profits, adding that these benefits achieved for at least ten years. On the other hand, there are also opinions which state that competitive advantage is if the company succeeds in obtaining above-normal profit levels called rent or profit above the breakeven level (Peteraf, 1993). The primary objective of the strategy is to achieve a sustained competitive advantage, which in turn will result in superior profitability and profit growth (Hill, Jones, & Galvin, 2004).

In strategic management research, competitive advantage has been traditionally defined as superior economic performance (Teece, Pisano, & Shuen, 2008). Other studies define competitive advantage as the ability of organizations to create higher economic value than competitors (J. B. Barney & Arikan, 2006). Competitive advantage was also defined as an attribute and resource of an organization that makes it possible to outperform others in the product industry or market (Chaharbaghi & Lynch, 1999).

Porter introduced the most popular definition of competitive advantage in 1980, namely the ability of a company to produce value for consumers at prices lower than production costs or consumers willing to pay premium prices because the value of these products is considered higher than the price. A company is considered to have a competitive advantage if a company can show performance above average or generate profits above the ordinary profit (rent) on an ongoing basis (Porter, 1980, 1985).

Referring to the various definitions developed by previous researchers above and adapting to the telecommunications industry in Indonesia, then in this study, competitive advantage is defined as "excellence that occurs when a business unit acquires or develops an attribute or combination of attributes that makes it capable of surpassing its competitors".

2.3. *The Source of Competitive Advantage*

Strategic management researchers have diverse opinions and models to identify the source of an organization's competitive advantage. In general, the model can be classified into two domains, namely environmental-related models, which is also referred to as the theory of Market-Based View (MBV), and firm-specific models, namely the theory of Resource-Based View (RBV).

The theory of Market-Based View (MBV) or the positioning school started from the theory of Industrial Organization (IO) and was further developed by Porter (1980). According to him, competitive advantage aims to find a position in an industry that can protect the company from five forces that determine competition, which consists of a competition between competitors in the industry, new competitor threats, supplier bargaining power, buyer bargaining power, and product substitution challenges.

Porter (1980) argues that the success of a company depends on two factors, namely the attractiveness of the industry where the company operates and the position of the company in the industry. A company can choose one of three generic strategies. First, overall cost leadership, this advantage can be achieved through several ways, such as the scale of production, efficiency through the process of learning, marketing, and controlling expenditure costs in a strict manner, including the costs of research and development, marketing, sales, and service. Second, product differentiation, which can be done through the introduction of a product with a specific design or image that other products do not have so that consumers are willing to pay at a premium price. Third, meeting the needs that are focused on certain consumers (customer groups, segments or geographical areas) more efficiently. Companies can apply at least one of the three strategies, and those that fail will be trapped and stuck in the middle.

Porter (1980) also argues that companies that seek to achieve superior sustainable performance must choose the type of industry that does not operate in perfect competition. Furthermore, to achieve and maintain competitive advantage, Porter is very concerned about the importance of building a dominant position. This advantage is obtained because a company that first invests in large production capacity can reduce production

costs. As a first mover, there are several other advantages, such as technological leadership, preemption of scarce assets, and buyer switching costs (Lieberman & Montgomery, 1988).

While Penrose first introduced the Theory of Resource-Based View (RBV) in 1959 (Penrose, 2009) and further developed by Wernerfelt (1984). RBV paid more attention to each company and not to the industry as the primary determinant of potential profits (Segal-Horn, 2004). The main concern of the RBV is the importance of differences in company-owned resources in an industry (J. Barney, 1991; Wernerfelt, 1984). The basis of the opinion of the RBV is that the use of resources using certain combinations turn out to produce differences in performance between companies.

From the two theoretical domains above, it can be concluded that competitive advantage could be explained from two levels, namely industry (environment) and firm (firm-specific). Competitive advantage at the organizational level stems from cost efficiency leadership and quality differentiation (Porter, 1980; Teece et al., 2008), while competitive advantage at the industry level stems from the organization's ability to interact with market pressure in its external environment (Porter, 1980, 1985).

Although today the theory of competitive advantage has swung from industry (MBV) to resources (RBV) as the most critical factor, it is not appropriate to leave the previous perspective concerning the emergence of new perspectives (Parnell, 2006). This opinion is reinforced by (Segal-Horn, 2004) which states that it is more productive not to contradict MBV and RBV but to see it as complementary. Competitive advantage is built by (i) positioning the product more effectively than competitors; and (ii) maintaining market position (Walker & Madsen, 2016) or it can be interpreted that competitive advantage is built through a combination of MBV and RBV (Segal-Horn, 2004).

From the discussion about MBV and RBV above, it shows that there are similarities and differences between the two perspectives. The equation is both trying to find 'rent' (profit above 'normal' profits). The difference is that MBV looks for monopolistic rents from imperfections in the final product market, while RBV looks for Ricardian rent derived from the presence of imperfections in market factors. Based on these facts, it can be concluded that the two perspectives complement each other as stated by the scientists mentioned above.

2.4. *Measuring the Competitive Advantage in Telecommunications Industry*

In general, there are three conventional approaches frequently applied by the researcher to measure competitive advantage. The first approach to measure competitive advantage is a Market-Based View theory (MBV), the second approach is a Resource-Based Theory (RBV), and the third approach is a combination of both RBV & MBV.

From the MBV approach, Peteraf (1993) introduced the concept of "the cornerstone of competitive advantage" namely competitive advantage can be formed through (1) heterogeneity, (2) ex-post limit to competition, (3) imperfect mobility, and (4) ex-ante limit to competition. Best (2013) states that the factors that produce a competitive advantage are differentiation advantage, cost advantage, and marketing advantage.

From the RBV approach, J. Barney (1991) introduced the concept of SCA (Sustainable Competitive Advantage), where sustainable competitive advantage will be obtained if the resources (resources) and capabilities are developed to meet the four dimensions of VRIO namely (1) valuable, (2) awareness, (3) imitability, and (4) organizational exploited. Hill, Charles W. L. and Jones (2004, 2008) introduced the concept of "generic building block of competitive advantage" which states that competitive advantage is resulted from (1) superior quality, (2) superior efficiency, (3) superior innovation, and (4) superior customer responsiveness.

The dimensions of competitive advantage that combine the theory of MBV and RBV were first developed by Nidumolu & Knotts (1998) and then developed by Chen (2012). Namely (1) Product Cost-Efficiency, which explains efficiency advantages in organizations when producing products, representing the RBV approach and

(2) Speed of Market Response, which describes the superiority of the organization in responding to market changes promptly, representing the MBV approach.

Nevertheless, a different opinion was also conveyed by Ma (2004), that competitive advantage, in general, is determined by dimensions of 4 C, namely (1) creation & innovation, (2) competition, (3) co-option, and (4) cooperation. Several other researchers provide different dimensions such as cost advantage and differentiation excellence (Porter, 1985), flexibility (Pearce & Robinson, 1995), speed (Eisenhardt, 1989), and innovation (Hamel & Prahalad, 1989; Kim & Mauborgne, 2005).

By considering the renewal of research, the suitability of the theory used in research as well as the characteristics of the telecommunications industry in Indonesia, the dimensions and indicators used to measure competitive advantage in this study are shown in Table 1.

Table 1. Measuring the Competitive Advantage

Dimensions	Indicators	References
Product Cost-Efficiency	Compared to our competitor, we can produce products/services at a lower cost (Q1-1) Compared to our competitor, we can charge competitive prices for products/services (Q1-2) Compared to our competitor, we have higher efficiency in producing products/services (Q1-3)	(Chen, 2012; Nidumolu & Knotts, 1998)
Market Responsiveness	Compared to our competitor, we can respond quickly to new customer needs (Q2-1) Compared to our competitor, we can better tailor products/services to individual customer needs (Q2-1) Compared to our competitor, we can quickly enter new product/service markets (Q2-1) Compared to our competitor, we have a better rate of introduction of new products/services (Q2-1)	(Chen, 2012; Nidumolu & Knotts, 1998)

Source: Literature Review

3. Method

3.1. *Methodology*

This study applied management science approach, concentrating on strategic management which is focusing on the competitive advantage. It is a descriptive study which aims to obtain the description of the competitive advantage in the Indonesian telecommunication industry.

The methodology applied in this study was a descriptive survey to obtain a systematic and accurate description of facts and characteristics of the specific subject, and the explanatory survey to examine hypothesis to answer the problems and the study objectives.

3.2. *Population and Sample*

The study population was all operators which have licenses to operate as Indonesian telecommunication providers, and there were 455 providers identified. The population and samples were drawn using the Slovin's formula as follows:

$n = N/(1+Ne^2)$ .... 1)

where n is samples, N is population, e = critical value (percentage of tolerance due to sampling error)

Therefore, with population (N) = 455 and critical value (e) = 5 percent, the required samples (n) were $455/(1+455 \times (0.05^2)) = 213$.

3.3. *Testing the Validity of the Research Instruments*

Validity testing is used to know to what extent the questionnaire developed can measure what needs to be measured. The test validity is intended to obtain information regarding the degree of precision of the measurement instrument-the questionnaire-to perform its measuring function. A measurement instrument with high validity will be likely to have small error variances. Therefore, the data collected will be more valid.

The study applied construct validity which determines validity by correlating score of each question item with the total score of all study variables. The total score is the total value obtained from addition of all items' score. Correlation between item score and total score should be statistically significant. If the score of all items prepared based on the dimensional concept correlates with the total score, it is concluded that the measuring instrument is valid. The validity of an instrument can be tested using product-moment formula or Pearson's product-moment correlation with formula as follows:

$$r_{xy} = \frac{n\Sigma X_i Y_i - (\Sigma X_i)(\Sigma Y_i)}{\sqrt{\left[n\Sigma X_i^2 - (\Sigma X_i)^2\right]\left[n\Sigma Y_i^2 - (\Sigma Y_i)^2\right]}}$$ …………………………………………………….……………..... 2)

where r_{xy} is product-moment correlation coefficient or Pearson correlation among items in the instrument with total items used, X is the score of each item in an instrument to be used, Y is total score of items in the instrument for variable specified, n is the number of respondents involved in instrument trial.

Test of the significance of the correlation coefficient is performed using the following r-count (t_{hit}) formula:

$$t_{hit} = \frac{r_{xy}\sqrt{(n-2)}}{\sqrt{(1-r_{xy}^2)}}$$ …………….....……………………………..…………………………….......................... 3)

Criteria for testing research instrument validity was conducted using significance level at α = 5 % and degree of freedom (N-2) as shown in the formula below:

    a. Question items in the instrument are valid if r-count ≥ r-table

    b. Question items in the instrument are not valid if r-count < r-table

Table 2 shows the results of test validity of data collected from questionnaires.

Table 2. Validity Testing Result of the Research Instruments

Sub-Variable	Questionnaire	r-$_{count}$ (t-$_{hit}$)	r-$_{table}$	Remark
Product Cost-Efficiency	Q1-1	0.742	0.138	Valid
	Q1-2	0.788	0.138	Valid
	Q1-3	0.815	0.138	Valid
Speed of Market Response	Q2-1	0.763	0.138	Valid
	Q2-2	0.783	0.138	Valid
	Q2-3	0.787	0.138	Valid
	Q2-4	0.786	0.138	Valid

Based on the results of the validity test, it is revealed that there is significant correlation value shown by r-table or correlation coefficient which is greater than 0.138. Therefore, question items in the questionnaire as an instrument of this study are valid to measure each variable.

3.4. *Testing the Reliability of the Research Instruments*

Reliability testing is conducted to obtain information as to what extent the measurement instrument shows its precision, accuracy, stability or consistency although measurement is conducted at different times. Reliability testing is performed to valid questions only to know to what extent the results of measurements are consistent if it is conducted using the split-half technique with the following steps:

    1. Split questions into two parts.

2. Add the score for each question on each part to develop two total scores for each respondent.
3. Correlate total score on the first split with the total score on the second split using product-moment correlation.
4. Seek for the reliability of all questions using Spearman-Brown formula as follows:

$$r_{tot} = \frac{2\,(r_{tt})}{1 + r_{tt}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{4)}$$

Where r_{tot} is internal reliability of all items, r_{tt} is the product-moment correlation between the odd part and even part. The decision on test reliability depends on criteria used, if the internal coefficient of all items (r_{tot}) is greater than r-table, then instrument items are reliable.

Results of tests on data from questionnaires demonstrate that the reliability index for the competitive advantage variable was 0.892, so significant correlation value was obtained by the reliability score that was greater than a critical value of 0.7. Therefore, question items in the questionnaire as an instrument in this research were able to provide a reliable measurement for each measurement variable.

3.5. *Descriptive Analysis Design*

Descriptive analysis is used to describe each variable in the study, so we can collect the information regarding perception/understanding of unit business leader of telecommunication providers in creating competitive advantage (high or low).

In order to conduct a descriptive analysis of each research variable, the following steps were taken:
1) Each variable indicator that is assessed by a respondent will be classified into five alternative answers with an interval scale describing the level of answer. Levels of the answer of each indicator have ranged between 1-5 with different level of meaning as outlined in Table 3.
2) Total score of each variable counted = total score of all variable indicators for all respondents.
3) The score of each variable counted = average of the total score.
4) To determine intervals in 5 levels, then the interval range generated as follows:

$$\text{Interval Range} = \frac{\text{Max Score} - \text{Min Score}}{\text{Number of intervals}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{5)}$$

5) Using the interval range, then the class interval is defined from the lowest up to the highest as displayed in Table 3.

Table 3. Measuring the Competitive Advantage

Answer	Product Cost-Efficiency	Market Responsiveness
1	Very Low	Very Low
2	Low	Low
3	Medium	Medium
4	High	High
5	Very High	Very High

6) Based on the above techniques, then the score of all variables of the research are shown as score category of competitive advantage as displayed in Table 4.

Table 4. Competitive Advantage Score Category

Dimensions	Score	Predicate
	1.00 – 1.80	Very Low
Product Cost-Efficiency	1.81 – 2.60	Low
	2.61 – 3.40	Medium
Market Responsiveness	3.41 – 4.20	High
	4.21 – 5.00	Very High

3.6. *Verificative Analysis Design*

The study applied quantitative analysis using Structural Equation Model (SEM) with variance or component based in which Partial Least Square (PLS) was used to design measurement model (outer model) defining correlation between the indicator and its latent variable. For the latent variable of competitive advantage, the indicator is reflective that means the indicator influenced by latent construct or indicator that reflects or represents the latent construct.

4. Result and Discussion

4.1. *Profile of Respondents*

The research required the respondent to be at the managerial level and who has been working at telecommunication network or service provider for several years. This research distributed 455 questionnaires, and the returned questionnaires were 220 copies, among which 213 were valid. It gives validity rate at 46.8%, and respondents' profile is as shown in Table 5.

Table 5. Profile of Respondents

Profile of Respondents	Samples (n)	Percentage (%)
Types of Telecommunications Provider:	55	25.82 %
Network Provider	158	74.18 %
Service Provider		
Size of Company:		
Big size company (Asset is above IDR 10 billion)	141	66.20 %
Medium size company (Asset is between IDR 500 million – IDR 10 billion)	57	23.94 %
Small size company (Asset is less than IDR500 million)	15	7.04 %
Position:		
Manager	92	43.19 %
General Manager	60	28.17 %
Director	61	28.64 %
Managerial Experience:		
Less than 1 Year	13	6.10 %
1 – 3 Years	33	15.49 %
More than 3 Years	167	78.40 %

Source: Survey Result

4.2. *The Competitive Advantage of Indonesia Telecommunication Industry*

To understand the competitive advantage of Indonesia telecommunication industry, a descriptive analysis and its competitive advantage were measured through two dimensions, namely Product Cost-Efficiency and Market Responsiveness. The following section describes the descriptive analysis of each dimension.

4.2.1. *Product Cost-Efficiency*

The dimension of product cost-efficiency measures the extent to which telecommunication operators achieve efficiency in producing their products or services. The results of the score calculation for each indicator in the Product Cost-Efficiency dimension are shown in Table 6.

Based on Table 6, it shows evidence that the cost efficiency of products produced by telecommunication operators in Indonesia belongs to the "high" category, which is contributed mainly by high levels of efficiency in producing products or services.

In a very tight competitive environment in the telecommunications industry, increasing operational costs and decreasing profitability, product cost-efficiency is crucial to maintaining business continuity. Following the RBV approach, efficient product costs will enable business units to create a competitive advantage through superior efficiency (Hill et al., 2004) and cost leadership (Porter, 1985).

Table 6. Descriptive Analysis of the Product Cost-Efficiency Dimension

No.	Indicators	Respondent Responses										Mean	Standard Deviation
		Very High		High		Middle		Low		Very Low			
		f	(%)	f	(%)	f	(%)	f	(%)	f	(%)		
Q1-1	Compared to our competitor, we can produce products/services at a lower cost	2	0.9%	18	8.5%	90	42.3%	73	34.3%	30	14.1%	3.52	0.87
Q1-2	Compared to our competitor, we can charge competitive prices for products/services	0	0.0%	11	5.2%	82	38.5%	89	41.8%	31	14.6%	3.66	0.79
Q1-3	Compared to our competitor, we have higher efficiency in producing products/services	1	0.5%	11	5.2%	77	36.2%	91	42.7%	33	15.5%	3.68	0.81
	Average											**3.62**	**0.83**

4.2.2. *Market Responsiveness*

The dimension of market responsiveness measures the extent of the speed of telecommunication operators' units in Indonesia in responding market changes promptly. The results of the score calculation for each indicator in the market responsiveness dimension are shown in Table 7.

Table 7. Descriptive Analysis of Market Responsiveness Dimension

No.	Indicators	Respondent Responses										Mean	Standard Deviation
		Very High		High		Middle		Low		Very Low			
		f	(%)	f	(%)	f	(%)	f	(%)	f	(%)		
Q2-1	Compared to our competitor, we can respond quickly to new customer needs	0	0.0%	12	5.6%	69	32.4%	96	45.1%	36	16.9%	3.73	0.81
Q2-2	Compared to our competitor, we can better tailor products/services to individual customer needs	0	0.0%	9	4.2%	72	33.8%	99	46.5%	33	15.5%	3.73	0.77
Q2-3	Compared to our competitor, we can quickly enter new product/service markets	0	0.0%	18	8.5%	95	44.6%	82	38.5%	18	8.5%	3.47	0.77
Q2-4	Compared to our competitor, we have a better rate of introduction of new products/services	0	0.0%	19	8.9%	88	41.3%	90	42.3%	16	7.5%	3.48	0.76
	Average											**3.60**	**0.78**

Based on Table 7, it shows that market responsiveness generated by telecommunication operators in Indonesia belongs to the "high" category, which is contributed by all indicators, especially speed in responding new customer needs and the ability to adjust products or services to the customer needs.

With the situation of the telecommunications industry classified as a high-velocity industry (Eisenhardt, 1989), Market responsiveness is the key to success in maintaining the existence of business units in the industry. It reinforces the opinion of Pearce & Robinson (2009) which states that "quick response to answer, information, and solutions can be the basis for competitive advantage."

In line with the Market-Based View (MBV) approach, market responsiveness will also make business units able to create competitive advantage through superior innovation (Hamel & Prahalad, 1989; Hill et al., 2004; Kim & Mauborgne, 2005) and differentiation advantage (Porter, 1985).

4.2.3. *Results of Hypothesis Testing*

For hypothesis testing, an average test of one sample was performed to determine whether the competitive advantage created by the Indonesian telecommunication industry belonged to a low or high category.

The hypothesis proposed in the average test of one sample is as follows:

> H_0: $\mu_0 < 3.41$ *The competitive advantage is not in a high category*
>
> H_1: $\mu_1 \geq 3.41$ *The competitive advantage is in a high category*

From the calculation using the MS Excel program, it shows that the value of x (mean) for competitive advantage was 3,611. With μ value of 3.40 (cut-off), Deviation Standard (σ) value of 0.63, and total samples were 213 respondents; the t-count was obtained using the following formula:

$$t = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.6)$$

Therefore: t-count = (3,61-3.40)/(0,63/ $\sqrt{}$ 213) = 4,865

From t-table with a degree of confidence at 95% and degree of freedom (df) = 213, the value obtained from t-table was 1.625. Referring to criteria if t-count > t-table (H_0 is rejected) and if t-count < t-table (H_0 is accepted), according to calculation, it is known that t-count (4,865) > t-table (1.652). Therefore, H_0 is rejected (H_1 is accepted), which means that competitive advantage is significantly in the high category.

Thus, the hypothesis that the telecommunication operator's business units in Indonesia have competitive advantages which are in the high category is acceptable. The results of this study support the research of Kaltum (2010) and Gunawan (2013) on all cellular telecommunications operators in Indonesia which showed that the competitive advantage possessed high category.

The result of this study also in line with the research of Suryanegara et al. (2018) which showed that the majority of the Indonesian market still has a "psychological dependency" on the old system. Although new technology may serve as a disruptive force causing inevitable changes to the old system, society still values a new technology that merely supports the existing system instead of replacing it.

4.3. *Creating Competitive Advantage in the Turbulent Business Environment*

To measure the competitive advantage in the turbulent business environment, the researcher uses Indonesia telecommunication industry as the research object. Its competitive advantage was also measured by two dimensions, namely the dimensions of product cost-efficiency (EFBP) and Market Responsiveness (RESP). Several indicators measure each dimension. Therefore, the measurement model in this study uses a second order model.
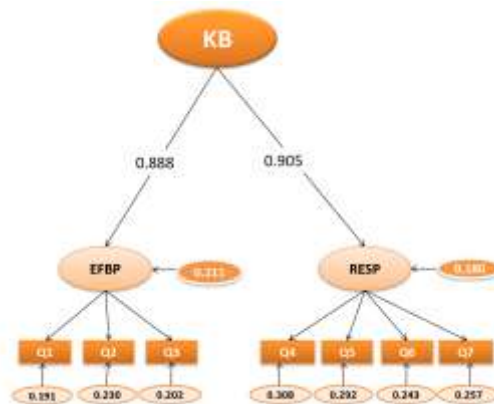

Figure 1. Measurement Model for Competitive Advantage Variable

Based on the results of data processing using XLSTAT software, the measurement model for competitive advantage variables is shown in Figure 1 and Table 8.

Table 8. Analysis of Measurement Models for Competitive Advantage Variable

Dimensions	Symbol	Standardized loadings	R^2	Variants of Error	t-count	Result
Product Cost-Efficiency	EFBP	0.888	0.789	0.211	28.086	Valid
Market Responsiveness	RESP	0.905	0.820	0.180	30.994	Valid
Composite Reliability (CR) = 0.916						
Average Variance Extracted (AVE) = 0.609						
Cronbach's alpha= 0.892						

Table 8 shows that the two dimensions used to measure the Competitive Advantage variable have excellent convergent validity levels with standardized values of loading factors greater than 0.50 and AVE higher than 0.5. Both dimensions are also concluded to be valid with composite reliability greater than 0.70 and Cronbach's Alpha greater than 0.6. The most powerful dimension in reflecting the Competitive Advantage variable is market responsiveness dimension, while the weakest is the Product Cost-Efficiency. The results of measurement model testing for both dimensions are presented in Table 9 and Table 10.

Table 9. Measurement Model Analysis for Product Cost-Efficiency Dimension

Indicator	Symbol	Standardized loadings	R^2	Variants of Error	t-count	Result
Compared to our competitor, we can respond quickly to new customer needs	Q11-1	0.900	0.809	0.191	16.588	Valid
Compared to our competitor, we can better tailor products/services to individual customer needs	Q11-2	0.878	0.770	0.230	15.585	Valid
Compared to our competitor, we can quickly enter new product/service markets	Q11-3	0.894	0.798	0.202	16.738	Valid
Composite Reliability (CR) = 0.920						
Average Variance Extracted (AVE) = 0.793						
Cronbach's alpha= 0.869						

As presented in Table 9, all indicators used to measure Product Cost-Efficiency are valid because their value factors are larger than 0.5, the AVE value is greater than 0.50, and the calculated values are higher than t-table 1.96. It means that all indicators used are significantly able to reflect the dimensions of Product Cost-Efficiency. All indicators used are also stated to be reliable because they have Composite Reliability (CR) value above 0.7 and Cronbach's Alpha above 0.6.

It shows that the indicators used have a very high degree of conformity in forming the dimension of Product Cost-Efficiency, which is equal to 0.920 on the scale of 0-1. The AVE value of 0.793 indicates that on average, 79.3% of the information contained in each indicator can be reflected through the Product Cost-Efficiency dimension. The results of the analysis also found that the most dominant indicator was the ability to produce products at lower costs. It means that changes in Product Cost-Efficiency are more reflected in the changes in these indicators.

As presented in Table 10, all indicators used to measure Market Responsiveness are declared valid because they have value factors which are larger than 0.5, the AVE value is greater than 0.50, and the calculated values

are higher than t-table 1.96. It means that all indicators used are significantly able to reflect market responsiveness dimension.

All indicators used are also stated to be reliable because they have Composite Reliability (CR) value greater than 0.7 and Cronbach's Alpha greater than 0.6. It shows that the indicators used have a very high level of conformity in shaping market responsiveness dimension which is equal to 0.913 on the scale of 0-1. The AVE value of 0.725 indicates that on average, 72.5% of the information contained in each indicator can be reflected through market responsiveness dimension.

The results of the analysis also found that the most dominant indicator was the speed of entering new product or service markets. It means that changes in market responsiveness are more reflected in the changes in these indicators.

Table 10. Measurement Model Analysis for Market Responsiveness Dimension

Indicator	Symbol	Standardized loadings	R^2	Variants of Error	t-count	Result
Compared to our competitor, we can respond quickly to new customer needs	Q12-1	0.832	0.692	0.308	13.425	Valid
Compared to our competitor, we can better tailor products/services to individual customer needs	Q12-2	0.841	0.708	0.292	11.871	Valid
Compared to our competitor, we can quickly enter new product/service markets	Q12-3	0.870	0.757	0.243	17.549	Valid
Compared to our competitor, we have a better rate of introduction of new products/services	Q12-4	0.862	0.743	0.257	15.871	Valid

Composite Reliability (CR) = 0.913
Average Variance Extracted (AVE) = 0.725
Cronbach's alpha= 0.873

4.4. *Problem Solving Analysis*

The study has made it possible to compare the result of descriptive and verificative analysis to know the real problem of competitive advantage in the Indonesian telecommunication industry. Based on Figure 2, it appears that the competitive advantage of telecommunications operators in Indonesia is in the excellent category. However, it is not yet optimal because there are still gaps between the average value of business strategy indicators that represent the perceptions of current business unit leaders and the test results of the perception indicator using the Partial Least Square (PLS) measurement model.
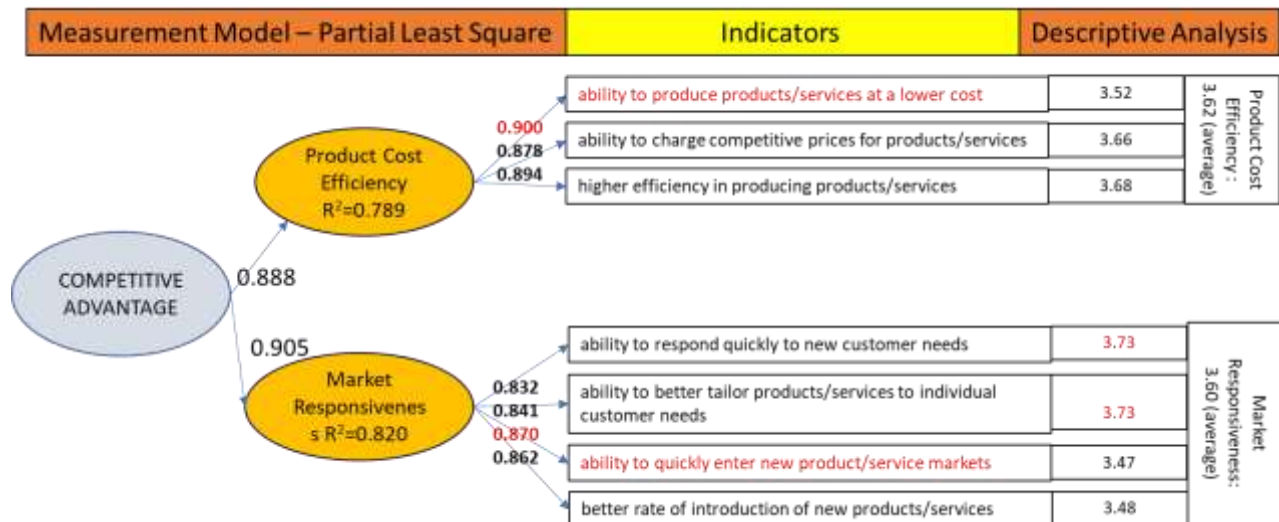

Figure 2. Solution Indicator for Competitive Advantage Variable

As described in Figure 2, it was also found that the most significant contributor to the increasing competitive advantage was market responsiveness dimension. Meanwhile, the descriptive analysis revealed that the level of understanding of business unit leaders in creating competitive advantage was more dominated by product cost-efficiency. It shows that in order to improve the performance of business units, the leaders of telecommunication operators need to improve their speed of responding the market.

Therefore, to improve competitive advantage, telecommunications operators need to increase their attention to all indicators of solutions. There are (1) the speed of entering new markets, by increasing the speed of business expansion to new, high-growth markets; (2) the speed of developing new products/services by improving/accelerating the product development innovation process; and (3) producing products/services at lower costs by developing low-cost products & encouraging cost optimization so as to reduce the cost of products.

5. Conclusion

This study contributes to the research in the following ways. First, it shows that the competitive advantage of telecommunications operators in Indonesia belongs to the excellent category, and built more through product cost-efficiency, especially higher efficiency in producing products or services.

Second, the results of the study show that market responsiveness turned out to have a more dominant contribution in creating a superior competitive advantage in a turbulent business environment. Thus, the competitive advantage created by Indonesia Telecommunication Industry is still not optimal. This finding is to support the results of research by the University of Padjadjaran in 2004 which showed that the competitive advantages of telecommunications companies in Indonesia were in the in-between category. With these conditions, companies are not easy to gain a competitive advantage because customers have many choices. Only companies that can create superior customer value will win the competition (Sucherly, 2007).

Third, it shows the evidence that to create competitive advantage in the turbulent business environment, it can be developed through Market Responsiveness (with standardized loadings 0.905), then followed by Product Cost-Efficiency (with standardized loadings 0.888). The most dominant indicator of increasing market responsiveness is the speed of entering new product or service markets, while the most dominant indicator of increasing the Product Cost-Efficiency is the ability to produce products with lower costs. It means to create competitive advantage in the turbulent business environment and maintain the sustainability of the telecommunications industry, telecommunications operators in Indonesia need to improve these indicators.

Based on this research, several recommendations are suggested for telecommunication provider in creating a more optimal competitive advantage. First, improve the speed of business expansion to new high-growth markets such as managed services, SMEs, the youth market, mobile financial services, digital media services, and other new markets. Second, attract new customers with a variety of new services, expand service areas and enter new segments such as communities, children, women, and other new segments. Third, increase intensity and improve or accelerate the process of innovation of new product development both internal development or in collaboration with various partners. Fourth, develop low-cost products and reduce product cost by conducting business process engineering and cost optimization, including developing different business models (such as internet business models financed by third parties or advertisers).

For further research development, it is recommended that the future researchers continue this study (1) by using control variable such as company size, (2) expand to other high-velocity industries or middle or low-velocity industry, i.e., public agencies or non-commercial institutions, (3) by developing the unit of analysis on corporate level and functional level. Furthermore, this study is required as the comparison and recommended to use time series or longitudinal data with ratio measurement.

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