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EMPIRICAL STUDY OF INDONESIAN CEMENT INDUSTRY BASED ON STRUCTURE, CONDUCT, AND PERFORMANCE PARADIGM

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Abstract

The cement industry is the building block of the nation's infrastructures. Few construction projects such as shores, roads, bridges, dams, homes, schools, hospitals, etc can take place without utilizing cement somewhere in the design. Structure, Conduct, and Performance (SCP Pradigm) is an approach commonly used in analyzing an industry. This research not only aimed to comprehensively analyze both quantitative and qualitative data using mixed method approach, but also explains the correlation between them. The study was conducted in a period of 11 years starting from 2005 to 2015.The result of the analysis shows that: (1) Indonesian cement industry's structure is tight oligopoly with the average score of market concentration

ratio (CR3) in 2005–2015 is 89.22% and the average score of MES in 2005–2015 is 38,16%; (2) Indonesian cement industry's conduct tends to have the "middle aggressive" characteristic; (3) The performance of the industry is 'rather excessive' with the ROA average score of Indonesian cement industry throughout 2005–2015 is 18.10%; and (4) there is a consistency element in the three research variables, which are structure, conduct and performance. It has been proven qualitatively (40%) and quantitatively (0.584 or 58,4%).

Keywords: Cement Industry, Indonesia, Industrial Organization, Mixed Method, SCP Paradigm, Strategic Management

INTRODUCTION

The cement industry is the building block of the nation's infrastructures. Few construction projects such as shores, roads, bridges, dams, homes, schools, hospitals, etc can take place without utilizing cement somewhere in the design. Until today, Indonesia's cement consumption is ranked low compared to other countries around the world. Nevertheless, this is a sign that the potential of cement consumption increase is still very big. Figure 1 represents the ratio of ASEAN per capita cement consumption in 2013-2015. In 2015, Indonesia's cement consumption was 243 kg/capita. It was still below China, Singapore, Brunei, Malaysia, Vietnam, and Thailand. However, the consumption level was higher than Philippines and India.

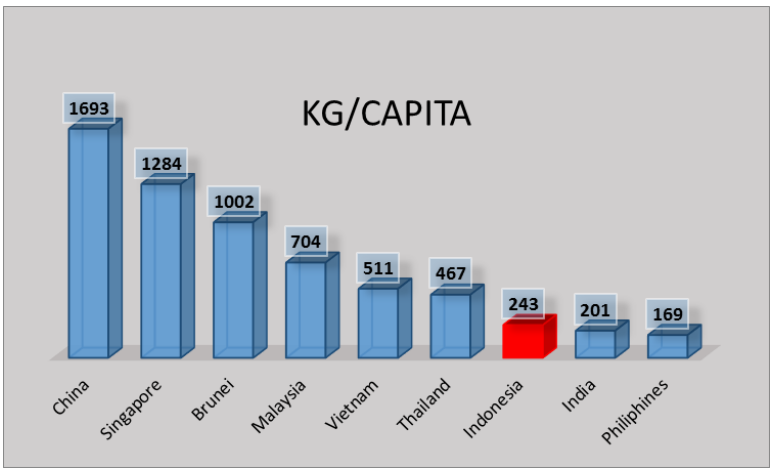


Figure 1. ASEAN Cement Consumption 2013-2015

Source: Morgan Stanley Capital in PT Semen Indonesia (Persero) Tbk Annual Report 2015. and The Prospect of Indonesia Cement Industry (2016)

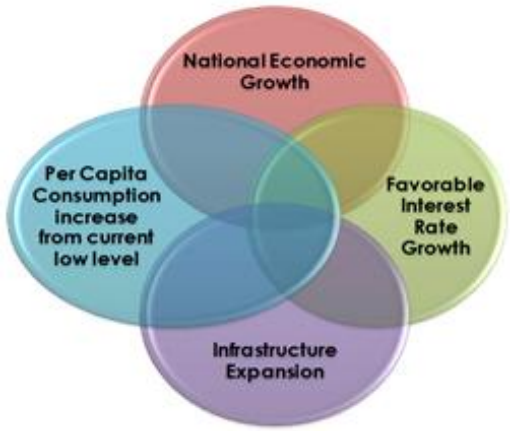


Figure 2. Domestic Cement Demand Key Drivers
Source: Prospect of Indonesian Cement Industry (2015), Rismayani and Pramudiana (2012), and Rismayani and Pramudiana (2013:51)

Figure 2 suggests that the key drivers of Indonesia's cement consumption increase are: (1) good national economic growth; (2) favorable interest rate; (3) massive infrastructure expansion; and (4) low level of current per capita consumption in Indonesia. The four factors can potentially increase cement need due to the increasing purchasing power of customer. Furthermore, there are several key factors supporting domestic cement demand: (1) infrastructure development, (2) commercial and industrial, (3) potential market, (4) cement consumption, and (5) demographic bonus (Corporate Presentation SMGR, 2016).

Infrastructure development. The Indonesian government earmarked IDR 313.5 trillion (approx. USD $22.9 billion) for infrastructure development in the 2016 State Budget, the highest budget ever allocated to the country's infrastructure development. In the Figure 3 it is visible that the government's infrastructure budget has risen sharply in recent years. Among the key priority infrastructure projects that should see groundbreaking in 2016 are 768.7 kilometers of national roads and the construction of 11,642 apartment units. Until 2019, total infrastructure spending planned is USD 433 billion. This is a good sign as the country is still plagued by a lack of quality and quantity of infrastructure development hence causing high logistics costs as well as social problems that is visible in Figure 4 (for example people's limited access to healthcare). Futhermore, Tabor (2015) stated that poor infrastructure causes high logistics costs. Indonesia's economic infrastructure is ranked far below that of, for example, Malaysia and Thailand on the World Bank's Logistics Performance Index. Indonesia's logistics costs are about 14% of total production costs, much higher than Japan's approximately 5%.

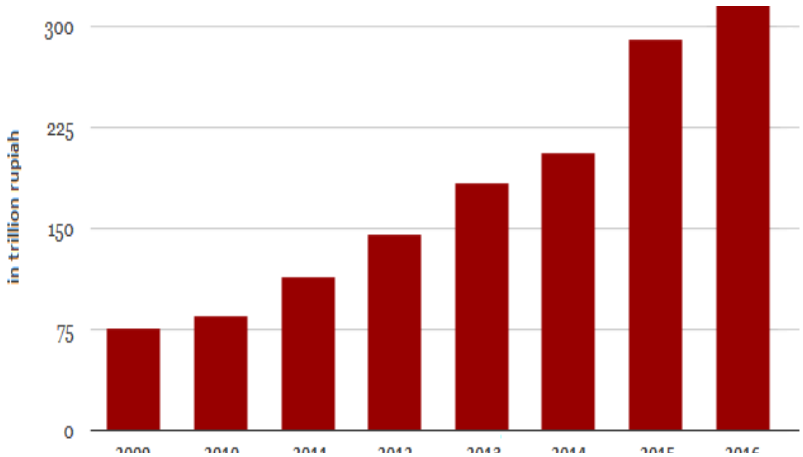


Figure 3. Indonesian Goverment's Infrastructure Budget

Source: www.indonesia-investment.com

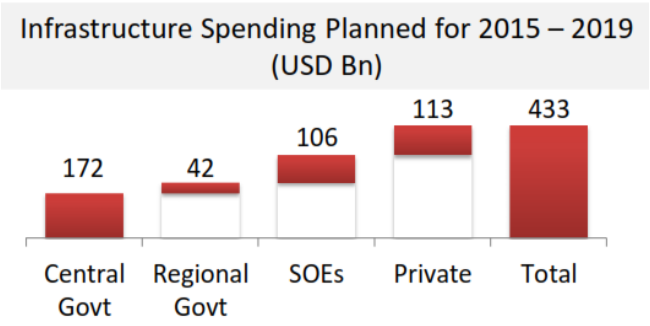


Figure 4. Indonesian Infrastructure Spending Planned

Source: SMGR's Corporate Presentation (2016)

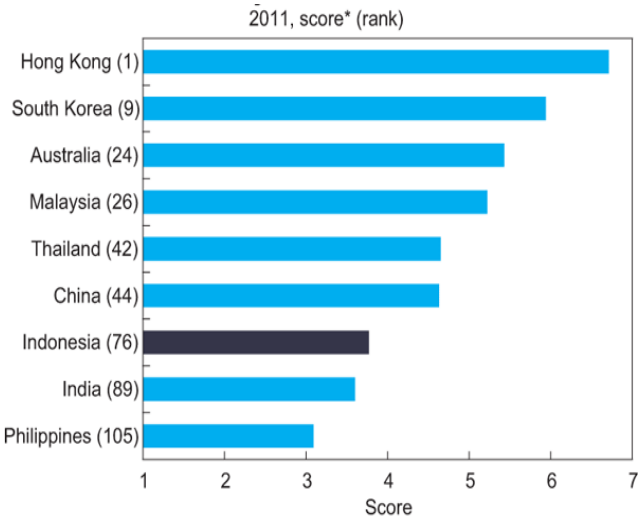


Figure 5. Government's Infrastructure Spending

Source: Elias and Noone (2011)

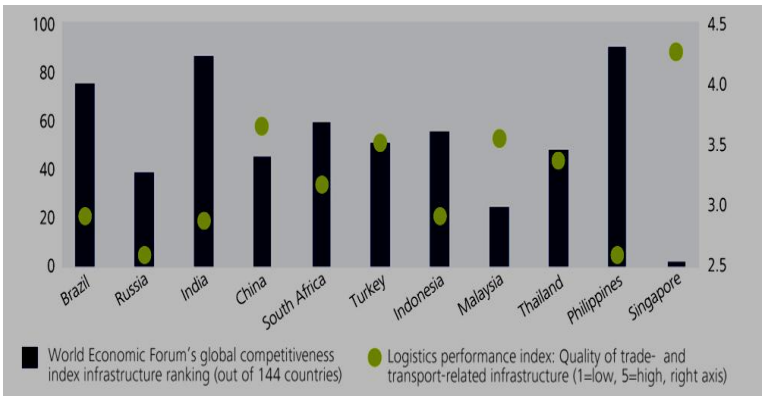


Figure 6. Quality of Infrastructure 2011 and Infrastructure Rankings

Source: World Economic Forum; World Bank, Deloitte Services LP economic analysis

Commercial and industrial. High growth in retail, commercial, and institutional sector in urban and semi-urban area.Economic growth and urbanization are fuelling demand for infrastructure in Indonesia. The construction market in indonesia is one of the emerging markets in South-east Asia. As of 2014, the construction industry accounted for 10.82% of the country's GDP. It is one of the leading industries in Indonesia, and this has made the country a major investment destination for the construction companies in APAC. Analyst forecast the construction market in Indonesia to grow at CAGR of 8.74% over the period 2014-2019. Rapid urbanization is resulting in a rise in the construction of mega structures and high-quality infrastructure, and will drive market growth.

The increasing investments in infrastructure development, alongside government policies to protect the environment, will also drive the market. With Indonesia tipped to have the second most profitable construction market in Asia in the medium term, there is little surprise that a significant number of major construction projects are already underway in both the commercial and residential arenas. But the residential sector is not the only area driving construction growth in Indonesia. Retail building looks poised to surge in the coming years, with Bank Indonesia figures showing that the real retail sales index rose from 140.9 in 2013 to 161.3 in 2014, representing an increase of 14.5 per cent. Growth on this scale will not go unnoticed by retailers and commercial building developers particularly given that Indonesia's population of more than 250 million people gives it a large consumer base. By 2019, the Indonesian government aims to have significantly developed the country's healthcare sector through its new National Health Insurance programme. This ambitious initiative, which aims to bring basic care within reach of everyone in the country, will require the construction of 150 new hospitals. Thats delivering a major shot in the arm to the healthcare building industry (buildingshow.com).

Potential market. With 255 million people, Indonesia is the fourth most populous country in the world and the largest both in ASEAN and in the world. Its economy is also the largest in ASEAN.Consumer spending is forecast to grow from $480 billion to $820 billion over that period because rapidly growing productive population. In addition, GDP construction projection. Key drivers growth in housing are population growth, rising per capita income, and mass urbanization.

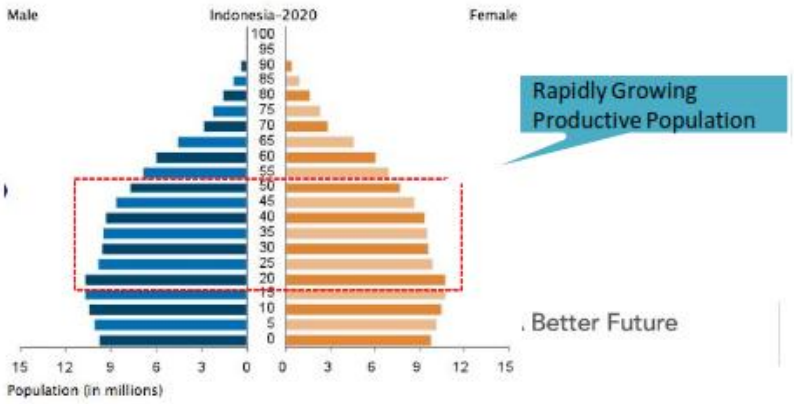


Figure 7. Indonesia's Population Trend 2020

Source: SMGR's Corporate Presentation (2016)

Demographic bonus. Indonesia's middle class is forecast to almost double from 74 millions peope in 2012 to 141 millon in 2020 (Figure 7). Mautz (2016) forecast that Indonesian economic growth is expected to be boosted by a demographic divided as half the population is under 30, and a rapid expansion of intra-ASEAN trade as barriers come down. Overall, these factors could boost annual economic growth rates above 7% for the next several years. In fact, the Economist Intelligence Unit forecast that Indonesia's economy will grow to become the 4th largest in the world by 2050.

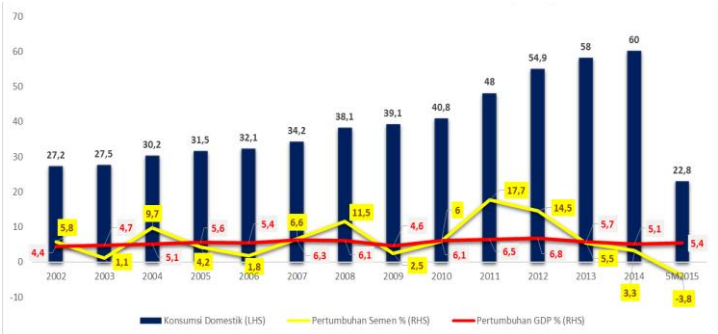


Figure 8. Domestics Cement Concumption and GDP 2002-2015

Source: SMGR's Corporate Presentation (2015)

Good national economic growth. Figure 8 represents the domestic cement consumption growth in 2002–2015. The Gross Domestic Product/GDP Growth fluctuation is mostly in line with the Cement Consumption Growth fluctuation. Indonesia's cement consumption growth that go in parallel with the GDP growth will sustain considering the economic growth target is 6.40 – 7.50% in the 2011–2014 period and 8–9% in the 2015 – 2025 period according to the 2011-2025 Indonesia Economic Development, Expansion and Acceleration Master Plan (MP3EI). But, Indonesia's cement consumption decline from 2011 until 2015 to -3,8%.

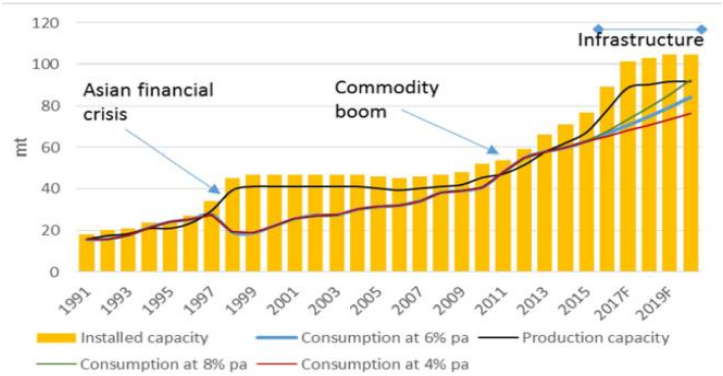


Figure 9. Cement Industry Capacity

Source: SMGR's Corporate Presentation (2016)

The problem with low cement consumption of Indonesia will give an opportunity to the cement consumption growth. In attempting to fulfill the demand growth, producers are expected to improve their production capacity. The actual condition shows that there are other factors that promote as well as challenge the realization of production capacity improvement. The characteristics and problems of cement industry in general can be understood by mapping the factors, in order to clearly depict the relationship between every factor (Rismayani and Pramudiana, 2012; 2013:55). From 2009 until 2014, cement industry increased production capacity to achieve objective, but cement consumption still decrease from 2011 until now. It cause overcapacity condition as it visible in Figure 9.

Based on dynamics condition of Indonesian cement industry, the objective of this research is to investigate the structure, conduct and performance of cement industry and to find the consistency or relationship of the three variables. The advantage of an approach with SCP paradigm is that the approach can organize the most essential principles or concepts in various complex fields. This method was introduced by Edward Mason and Joe S. Bain (1940) and this research uses SCP paradigm model with the perspective approach introduced by Panigotou (2006).

LITERATURE REVIEW

SCP paradigm is a roadmap to identify the factors that determine the competitive characteristic or the competitive market, to analyze the companies' behavior, and to assess the success of the industry in gaining profits from the consumer. *Structure* refers to the structure of industry market which indicates the level of competition in the industry. *Conduct* refers to business practices adopted by companies in the industry in implementing competitive strategy and create competitive advantage. *Performance* refers to measurements performed by industry or companies in the industry in determining that the company or the industry has already reached the target that has been set (Rismayani and Pramudiana, 2013).

The analysis model of the structure-conduct-performance continues to evolve. The following is an analysis model based on previous theories about the structure, behavior, and performance that has been recorded over a period of decades until now. There are several frameworks and perspectives of SCP namely: *"Harvard Tradition", "Chicago-UCLA School", "Contestable Market", "Game Theory", "New-Harvard Tradition",* and the Perspectives of *"Strategic Behavior".* The Development of Organization Theory is conducted by Bain and Mason (1959) who are famous for the *"Harvard Tradition"* and had developed the Structure-Conduct-Performance (SCP). The indicators of market structure are the level of concentration and entry barriers so that these indicators will affect the generated performance through the companies' behavior in the market. The perspectives of *"Chicago-UCLA School"* originate from the price theory used as a tool of market analysis. According to this perspective, the companies' performance will affect the companies' behavior in the pricing strategy, the production strategy, and the promotion strategy. This perspective is pioneered by Stigler (1980) as the reaction of the perspective given by the structuralists proposed by Bain. Baumol (1982) suggests that there is a perspective or another version, which emphasizes that the excessive profits will draw new companies to enter the market, especially with the low entry cost or called *"Contestable Market",* which is the particular market structure that is not enough based on the performance. The perspective model of *"Contestable Market"* emphasizes that the excessive profits will attract the new companies to enter the market, especially with the low entry cost. This perspective is popular with the term freedom to enter the market *"contestability"* or *"free entry school"*. Furthermore, the model and perspectives of *"Game Theory"* is an alternative model and a new ideology in the theory of industrial organization *(New Industrial Organization Theory).* The ideology in the new industrial organization *(New Industrial Organization School)* decides an abstract analysis and the condition of two companies with the development of the game theory *(Game Theory)*, especially for the companies' behavior of non-cooperative oligopoly category. There are two categories of model in the approach of non-cooperative oligopoly Game Theory,

namely an oligopoly model in a single period and an oligopoly model in various periods. There are additional factors in analyzing the SCP namely basic condition and public policy in the SCP model approach of *New-Harvard Tradition* proposed by Carlton and Perlof (2000). Martin (1993) develops a framework of industrial organization by viewing the existence of a very simple causal relationship in linear model called *"Strategic Behavior"*. The pattern of the linear perspective assumes that the structure is likely to affect how companies behave and how the performance results obtained by the company. In the model, the structure and behavior are determined by the basic condition include demand and technology. The structure influences behavior and vice versa, the behavior through a strategy called *strategic behavior* also influences the structure. Therefore, the structure and the behavior interact to each other in affecting the companies' performance.

Martin's model and perspective are developed more detailed by George Panigotou (2005) in Rismayani and Pramudiana (2013) and Novi et.al (2015) (Figure 10). The model that originates from the strategic group perspective is generated based on the research toward the managers who provide cognitive perspective of the factors in the SCP paradigm. The differences to the Martin's SCP paradigm (1993): **First**, the emphasis on the strategy as an indicator of behavioral variable. The strategy in this framework is linked either through a descriptive approach and perspective approach. This strategy is divided into *intended strategy, mission statement and objectives,* and *emergent strategies*. **Second**, *Key Success Factor* (KSF) is a new variable that is formed by the interaction of all variables (*basic conditions, government rules, demand, supply, public policy, structure, conduct,* and *performance)*. Both new variable namely KSF and strategies indirectly affect each other.

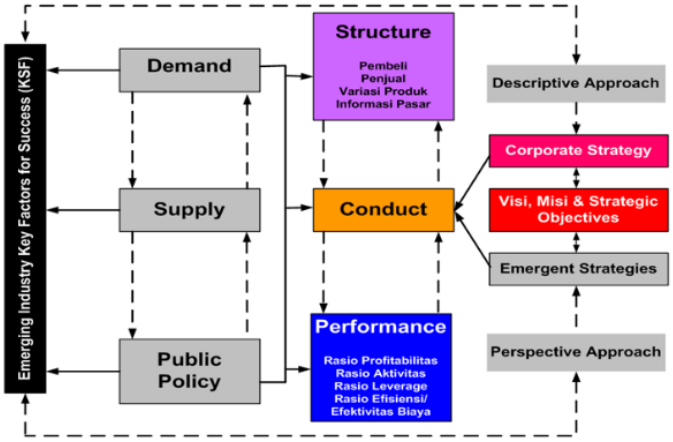


Figure 10. SCP Framework for Indonesia Cement Industry

Source: Panigotou (2005), Rismayani and Pramudiana (2012), dan Novi et al (2015)

In this study, there are some restrictions of SCP indicator, namely: (1) Structure is viewed based on the indicator of buyers, sellers, product differentiation, market information, market structure based on concentration ratio, and entry barriers based on MES; (2) Conduct refers to the vision, mission, strategic objectives, corporate strategy, as well as the degree of industrial growth based on CAPEX and OPEX; and (3) Performance refers to the degree of income return toward assets based on ROA (Return on Asset) which shows the ability of the industry in producing profits based on the level of assets' ownership.

RESEARCH METHOD

This study method refers to Rismayani and Pramudiana (2012). The data collected in this research are secondary data obtained from various sources such as Central Bureau of Statistics (BPS) the local research institution, governmental department reports, newspapers, annual report of cement industry companies, companies' official websites, local and international journals, magazines, television, and internet. The study was conducted in a period of 11 years starting from 2005 to 2015. The Data only cover identification of three biggest cement companies in Indonesia, namely: SMGR, INTP, and SMCB because in point of fact, CR3 of three companies excess 70%. Mixed method analysis are done without chronological order, or also known as the concurrent mixed analysis.

a. Structure

From the qualitative side, the structure of the industry is analyzed descriptively to obtain the information about the structure represented by four indicators, namely the number of buyer, the number of seller, product differentiation, and barrier to entry.The structure of the industry is analyzed by two indicators, namely market share and barrier to entry from the quantitative side. The market share of this study is calculated using concentration ratio (CR3) of three biggest companies. Barriers to entry is a barrier to get into a market for a new industry to keep working on the same field. Calculation is done using MES (Minimum Efficiency of Scale).

b. Conduct

*Conduct*is the business activity of companies to generate competitive advantage. The four conduct variable indicators that include vision, mission, strategic objective and corporate strategy, are analyzed using quantification methode after qualitatively phase. Conduct indicators that can be analyzed quantitatively is the investment of companies both in the form of CAPEX or OPEX.

1) Vision.

Vision assessment evaluation will be based on the elaboration of vision dimension for every company. Table 1 is made to match the vision statement of the company and the normative

criteria. The Vision Evaluation steps include: (a) company's vision is matched with the five normative criteria; (b) if the vision statement is in accordance with the criteria, then put a tick (√) that indicates high tendency pattern; and (c) if the vision statement is not in accordance, then put a dash (-) that indicates low tendency pattern.

Table 1. Vision Evaluation Matrix

Company	Vision (2015)	Dimensions							%
		Graphic	Directional	Focused	Flexible	Feasible	Desirable	Easy to Communicate	
SMGR									
INTP									
SMCB									
%									

Source: Rismayani and Pramudiana (2012, 2013)

2) Mission

Mission assessment evaluation is based on the elaboration of the mission dimension form Fred R David that are customers, product or service, markets, technology, concern for survival, philosophy, self-concept, concern of public image, and concern for employee (Table 2). Mission Evaluation Steps include: (a) company's mission is matched with the five normative criteria; (b) if the mission statement is in accordance with the criteria, then put a tick (√) that indicates high tendency pattern; and (c) if the mission statement is not in accordance, then put a dash (-) that indicates low tendency pattern.

Table 2. Mission Evaluation Matrix

Company	Mission (2015)	Dimensions									%
		customers	product or service	markets	technology	concern for survival	philosophy	Self concept	concern of public image	concern for emloyee	
SMGR											
INTP											
SMCB											
%											

Source: Rismayani and Pramudiana (2012, 2013)

3) Strategic Objective

Strategic objective evaluation matrix in Table 3 is made to match the strategic objective statement of the company and the normative criteria. The evaluation is done as an attempt to evaluate whether the strategic objective of the company can be categorized as good statement.

Table 3. Strategic Objective Evaluation Matrix

Company	Strategic Objective	Dimensions					%
		Specific	Measurable	Attainable	Realistic	Time Frame	
SMGR							
INTP							
SMCB							
%							

Source: Rismayani and Pramudiana (2012, 2013)

Strategic Objective Identification Steps include: (a) company's strategic objective is matched with the five normative criteria; (b) if the strategic objective statement is in accordance with the criteria, then put a tick (√) that indicates high tendency pattern; and (c) if the strategic objective statement is not in accordance, then put a dash (-) that indicates low tendency pattern.

4) Corporate Strategy

a) Company Growth Strategy Evaluation

Growth strategy evaluation is done through every cement subsidiary company based on the business run, year found, and the way the subsidiary joined the parent companies. The internal development, acquisition, and joint venture are the three classifications to evaluate the way the subsidiary joined the parent companies.

Table 4. Company Growth Strategy Evaluation

Companys' Subsidiary Name	Business	Year	Join Method

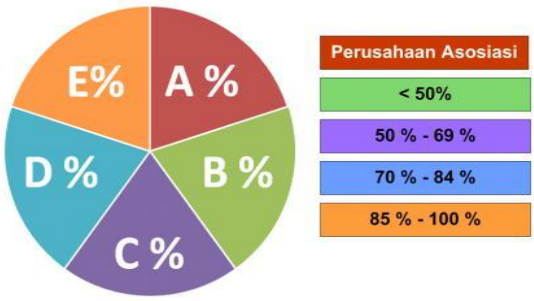
Source: Rismayani and Pramudiana (2012, 2013)

The steps of growth strategy evaluation of Company X in Table 4 include: (a) identifying subsidiaries' names and business types; (b) identifying the year the subsidiaries found; (c) identifying ways the subsidiaries joined the parent company. After tabulating the company

growth evaluation, the next step is identifying company's growth pattern based on subsidiaries shareholding pattern, subsidiaries growth pattern evaluation, and ansoff matrix growth map.

Subsidiaries Shareholding Pattern. The evaluation of shareholdings in every subsidiary will depict the shareholding pattern of the parent company. Pie diagram in Figure 11 is used as a tool to evaluate the shareholding pattern.The identification steps of the shareholding pattern of company X include: (a) identifying of the number of subsidiaries as well as the shareholding amount of the subsidiaries; (b) making pie diagram based on the data of each subsidiary; and (c) identifying the type of shareholdings.

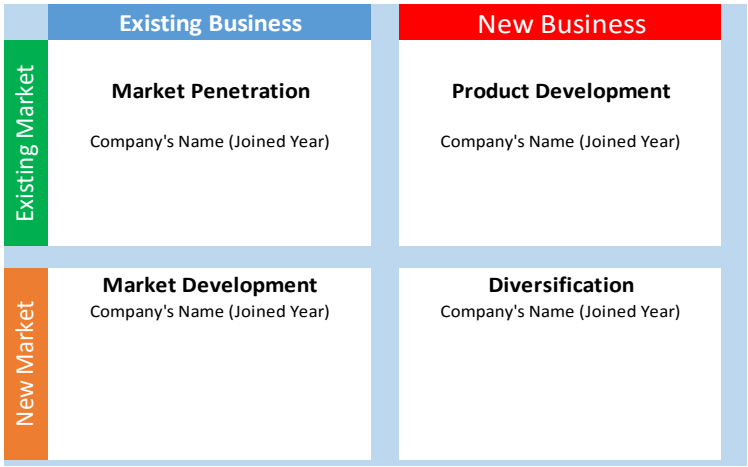
Figure 11. Ownership Pattern of Company



Source: Rismayani and Pramudiana (2012, 2013)

Subsidiaries Growth Pattern Evaluation. This research investigates the growth pattern of subsidiaries based on the business lines run, by making subsidiaries pattern based on the industry run and the year the subsidiaries found.

Figure 12. Ansoff Matrix



Source: Rismayani and Pramudiana (2012, 2013)

Ansoff Matrix Growth Map. Ansoff Matrix can identify companies' position in business as well as helping to decide which strategies are used by the company based on the business lines run by subsidiaries, as presented in Figure 12. The steps of growth pattern mapping include: (a) identifying subsidiaries' names and year found; (b) mapping the company's growth based on the business lines run, whether they belong to the existing business or new business; and (c) mapping company's growth based on that market, whether they are for new market or aims at existing market.

c. Performance

Conduct indicator that can be analyzed quantitative is Return on Asset (ROA). Futhermore, analyze industry performance based on profitability ratio, activity ratio, leverage ratio, and eficiency ratio.

d. The Consistency of Structure, Conduct, and Performance

1) Qualitative

The relationship among structure, behavior, and performance of the national cement industry are analyzed qualitatively by observing value fluctuations (up/down) of each indicator (ROA, CR3,MES, OPEX, andCAPEX) compared to the previous year. Furthermore, it is compared to the relationship of each variable based on the individual indicators whether having an equality fluctuation (up/down) that indicates the positive (+) relationship or an inequality fluctuations (up/down) that indicates negative (-) relationship.

2) Quantitative

The relationship among structure, behavior, and performance of the national cement industry are analyzed quantitatively by using multiple analysis regression. The model that will be tested in this study describes a relationship between structure and behavior (independent variable) of an industry on the performance (the dependent variable) industry itself. Structural variable is calculated based on CR3 and MES. Behavioral variable is calculated based on the OPEX and CAPEX. Performance variable as the dependent variable is calculated based on the ROA. Below is the equation form:

$$ROA = a_0 + a_1 CR3 + a_2 MES + a_3 OPEX + a_4 CAPEX$$

Where, :
ROA : *Return on Total Assets*
CR3 : Concentration Ratio 3 Parent Company
OPEX : *Operational Expenditures*
CAPEX : *CapitalExpenditures*

The processing data in testing the model above is conducted by using SPSS software. Hypothesis for consistency relationship of structure, behavior, and performance quantitatively are as follow:

H0: *p-value*(*significanceF*) = 0, meansCR3=MES=OPEX=CAPEX simultaneously does not affect ROA

H1: *p-value*(*significanceF*) ≠0, meansCR3=MES=OPEX=CAPEX simultaneously affects ROA

The higher the level of market concentration (CR3), the more increase the corporate profits. Entry barrier (MES) done by the company, will also produce the increasing of industry profits. By the more increasing of operational costs (OPEX) and the investment costs of assets (CAPEX) issued by the company, the corporate profits gained by the company will increase too.

ANALYSIS AND RESULT

a. Structure

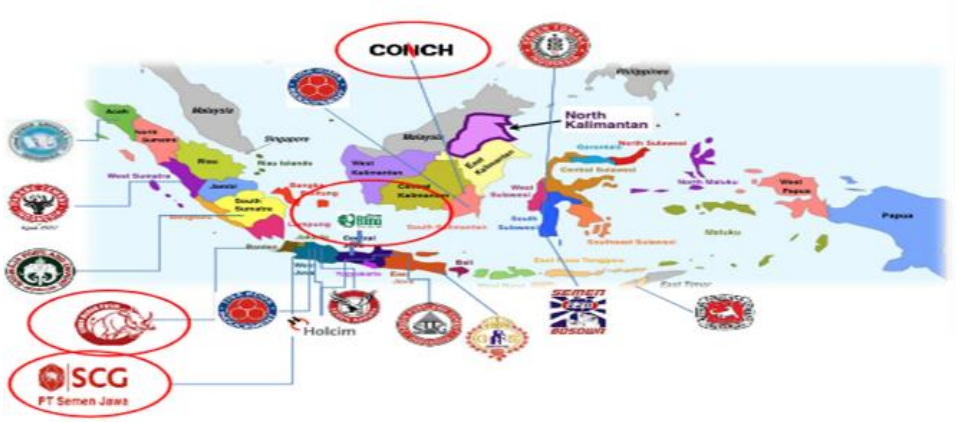


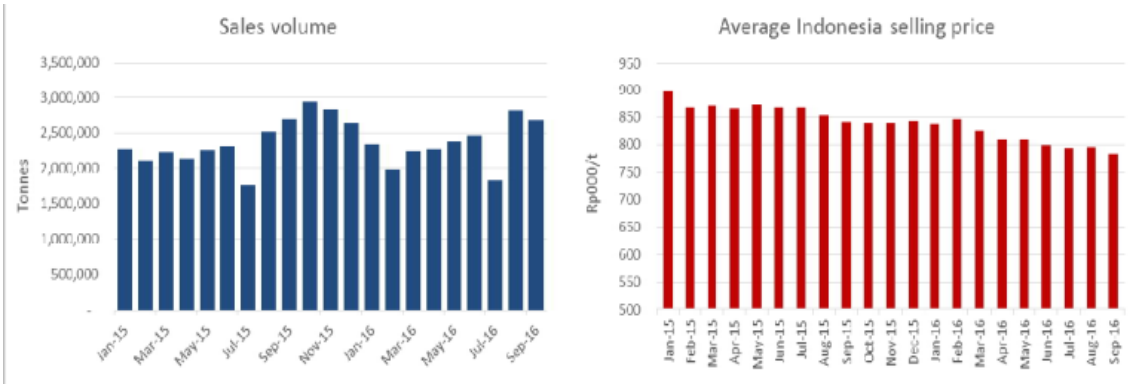
Figure 13. Indonesia's Cement Industry Players

Source: SMGR's Corporate Presentation (2016)

Seller. In 2016, Indonesia's cement industry has 9 existing player there are Semen Indonesia, Semen Andalas, Semen Baturaja, Indocement TP, Holcim Indonesia, Semen Bosowa, Semen Kupang, Semen Jui Shin, and Semen Puger with total capacity 80.1 mt. Futhermore, has 4 new player with total capacity 9,6 mt, there are Semen Merah Putih, Semen Anhui Conch, and Semen Pan Asia. Plant location spread all province excluding Maluku dan Irian Jaya. Three biggest company dominate market with total capacity 68 mt or 75,81%. Semen Indonesia as market leader with total capacity 30 mt. For the next year, desain capacity still projected 89,7

mt, production capacity 75,5 mt. Market supply come from domestic production (65 mt) and import (1,5 mt), beside that Indonesia still doing export with capacity 1,5 mt (Figure 13). New entrant still exist because Anhui Cement will develop manufacture at Papua. The study of CR3 showed that the cement industry has an average CR3 in the period 2005 to 2015 about 89.22%. Bain (1956) stated it can be categorized as very high concentrated oligopoly of market structure).

Figure 14. Sales Volume and Selling Price



Source: SMGR's Corporate Presentation (2016)

Figure 14 it visible that sales volume per month from January 2015 until november 2016 ranging 3 mt as peak and 1,7 mt as a lowest sales. Average Indonesia selling price tend to decrease until Rp 800.000/ton.

There are other information that need to be considered to see the characteristics of sellers in the industry: (a) the information of new competitors (one more new entrant until 2017 in papua territory); (b)uneven the whole distribution of the company karena indonesia bagian timur yaitu maluku dan papua belum ada perusahaan semen; (c) the condition of Indonesian cement exports and importswhich is majority production used to domestic consumption; and (d) the information about the changes of company's position and rankwhich is so many new entrant from 2014 until 2017 that can cause shifting in industry map. The impact of phenomena that occur on the condition of Indonesian cement industry in general are: (a) a monopoly in each respective territories; (b) the price of Indonesia's cement is the highest among other countries; (c) geographical price disparity, (d) the declining of cement imports, and (e) an indication of a cartel in the industry. Rismayani and Pramudiana (2012; 2013) stated that the prediction of phenomenon that will occur in the future (2030) is there will still occur oligopoly, monopoly in each territory, a slight reduction in domestic cement price disparities, the increasing of potential import, and the existence of cartel indication in the domestic cement industry.

Buyer. The distribution of cement was in parallel with the composition of the distribution of the Indonesian population. The average consumption of Java cement (55%) was below the average even though the majority of consumption (57%) being there. The cement industry with seven stakeholders produced two types of major products, namely clinker and cement. Domestic cement consumption can be divided into two, namely bulk and bag. Bulk (23%) used for ready-mix (infrastructure) (60%), fabricator (pre-cast, fiber cement, cement based industry) 35%, and project (mortar and render) 5%. Bag consumption has majority utilization as 77% for housing 90% and cement based industry 10%. Internal research SMGR stated that retail (residential) sector is the largest consumer of cement in Indonesia. The happening phenomenon right now in terms of cement consumption is the occurrence of trend in shifting the use of OPC cement into PCC cement in Indonesia. In addition to visits from consumers' classification and buyers' distribution, the buyer indicators also have to see how the company sells the product. The future estimation (2025-2030), the consumption of bulk cement will increase along with the target of development which shifts to the outside region of Java Island. The pattern of consumption distribution will also remain parallel to follow the distribution of the population and shifting of infrastructure development project policy.

Product Differentiation.There are 11 types of cement produced in Indonesia, but they could not be categorized as the heterogeneous product differentiation. It is because based on the level of cement consumption dominated by retail cement bag or 80.00%, then the type of cement that are circulating on the market is the PCC around 64.00% of the total industrial output per year during 2004-2016 and is expected to continue to rise. Therefore, the product differentiation of cement can be categorized as homogeneous industrially. Although cement includes undifferentiated product (homogeneous), buyers or consumers do not have many choices to buy. Thus, the market tends not to be competitive and the manufacturers can control the market condition to determine the price and output in a market by itself.

Entry Barriers.The study of MES showed that the cement industry has an average MES in the period 2005 to 2015 about 38,16%. The value of MES that is far above 10.00% in the cement industry shows the high entry barriers in the market. The high value of MES can be an obstacle to the entry of new companies into the market of the Indonesia cement industry. New entrants barriers come from not only endogeneous barriers but also exogeneous barriers there are high capital requirement; large minimum economic of scale; power of control of strategic resources; and high cost structure from energy and transportation. However, cement market still estimated in overcapacity condition because the increasing capacity from existing and new player until

2017. Furthermore unpredictable season dan delayed several infrastructure project still remain industry player to boost sales volume. However, thats will be considered for new comers in industry. The decrease in sales volume until 2016 because delayed of infrastructure project and overcapacity condition added considerations for new entrants.

b. Conduct

Vision.

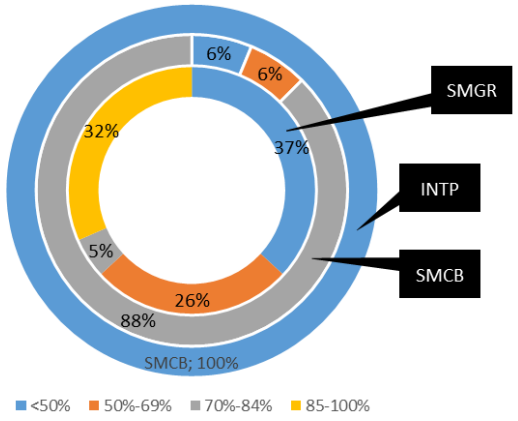
Based on the normative evaluation results, vision can be concluded that two of the three (66.67%) companies in the cement industry had followed five to seven of the seven normative dimensions of vision (71%). Two of the three research objects had an effective which indicates that the vision in the Indonesian cement industry had been effective.

Mission.

Based on the normative evaluation results, mission can be concluded that the companies in the cement industry had followed three to seven of the nine normative dimensions of mission (33.33%-77.76%) normative characteristics of existing missions. Two of the three research objects had ineffective mission which indicate that the mission in the Indonesian cement industry had not been effective.

Strategic Objective. The normative evaluation results of strategic objective concluded that the companies in the cement industry had followed two to three of the five normative dimensions of strategic objectives (40.00% -60.00%). Two of the three of research objects had ineffective strategic objectives which indicate that the strategic objectives in Indonesian cement industry had not been effective.

Figure 15. Ownership Pattern of Company



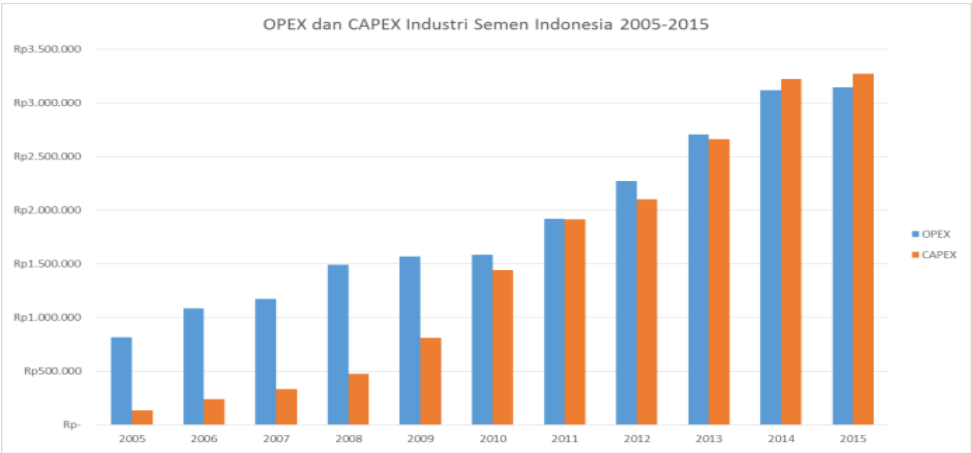
Corporate Strategy. Cement sector deploy a corporate strategy i.e. market penetration, product development, market development, and diversification. As a market leader Semen Indonesia has market development strategy (61,90%) strategy to expand business through new market in existing business, diversification (19,05%), market penetration (14,29%), and product development (4,76) (Table 5). As a second largest company, Indoncement growth their business through product development (35,29%), diversification (29,42%), market development (17,65%), and market penetration (17,65%).

Table 5. Corporate Strategy

	Existing Business	New Business
Existing Market	**Market Penetration** 14,29% 17,65%	**Product Development** 4,76% 35,29% 33,33%
New Market	**Market Development** 61,90% 17,65% 0,00%	**Diversification** 19,05% 29,41% 66,67%

OPEX and CAPEX. Based on Figure 16, the value of industry OPEX and CAPEX as a whole tended to increase from 2005 to 2015. The value of industry OPEX and CAPEX that tended to increase indicated the existence of industrial activity or behavior. The expansion conducted by the industry which is reflected in corporate strategy of the three prominent companies in the domestic cement industry can be categorized as middle aggressive behavior.

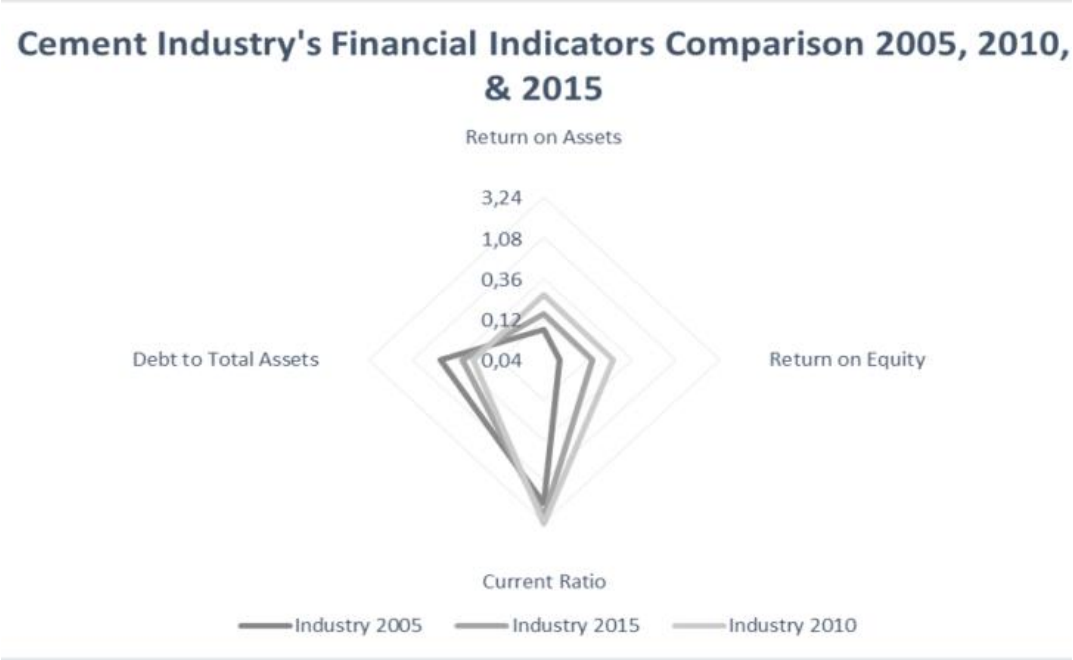
Figure 16. Indonesian Cement's CAPEX & OPEX (2005-2015)



c. Performance.

Figure 17 showed different average of four indicators of financial ratios cement industry 2005 and 2015. Based on this figure, it can be seen that the ratio movement of the fourth digit from 2005 to 2016 has increased. The increase of current ratio indicated that the industry's ability to meet short-term obligations had increased. The increase of debt to total assets ratio indicated that the Indonesian cement industry in 2015 did a lot of financial assets acquired from debt to finance the additional capacity of installed industry in order to anticipate the shortage and under-capacity. The increase of ROA indicated that the cement industry is more and more efficient in terms of the ratio of assets that generate profits. The increase of ROE indicated that the level of industry profits returned to the stakeholders increased. This gives a positive value for the industry to increase shareholder's interests in giving investment.

Figure 17. Performance Indicators Comparison



d. Consistency

Based on qualitative test (Table 6), the results showed the relationship between CR3-OPEX-ROA and CR3-CAPEX-ROA equal to 40%, while the relationship between MES-OPEX-ROA and MES-CAPEX-ROA equal to 40%. Based on data analysis techniques quantitatively using multiple regression analysis showed that simultaneously independent variables (CR3, MES, OPEX, and CAPEX) affected the dependent variable (ROA) with model compatibility equal to 58,4%.

CONCLUSIONS

Indonesian cement industry structure is a tight oligopoly with several characteristics: who spread across Indonesia with monopolistic tendencies of each region; the average value of the market concentration ratio (CR3) from 2005 to 2015 equal to 89.22%; the number of buyers are spread throughout Indonesia, with its distribution follows the distribution pattern of the population; homogeneous products; and the average value of MES 2005-2015 equal to 38,16%.

Table 6. Consistency

Indikator	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	%
CR3	Naik	Turun	Naik	Naik	Turun	Turun	Naik	Naik	Naik	Turun	60,00%
MES	Naik	Turun	Naik	Turun	Naik	Turun	Naik	Turun	Naik	Turun	50,00%
OPEX	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	100,00%
CAPEX	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Naik	100,00%
ROA	Naik	Naik	Naik	Naik	Naik	Naik	Naik	Turun	Turun	Turun	70,00%
CR3-OPEX	Positif	Negatif	Positif	Positif	Negatif	Negatif	Positif	Positif	Positif	Negatif	60,00%
CR3-CAPEX	Positif	Negatif	Positif	Positif	Negatif	Negatif	Positif	Positif	Positif	Negatif	60,00%
MES-OPEX	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	50,00%
MES-CAPEX	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	50,00%
CR3-ROA	Positif	Negatif	Positif	Positif	Negatif	Negatif	Positif	Negatif	Negatif	Positif	50,00%
MES-ROA	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Positif	Negatif	Positif	60,00%
OPEX-ROA	Positif	Positif	Positif	Positif	Positif	Positif	Positif	Negatif	Negatif	Negatif	70,00%
CAPEX-ROA	Positif	Positif	Positif	Positif	Positif	Positif	Positif	Negatif	Negatif	Negatif	70,00%
CR3-CAPEX-ROA	Positif	Negatif	Positif	Positif	Negatif	Negatif	Positif	Negatif	Negatif	Negatif	40,00%
CR3-OPEX-ROA	Positif	Negatif	Positif	Positif	Negatif	Negatif	Positif	Negatif	Negatif	Negatif	40,00%
MES-OPEX-ROA	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	Negatif	Negatif	40,00%
MES-CAPEX-ROA	Positif	Negatif	Positif	Negatif	Positif	Negatif	Positif	Negatif	Negatif	Negatif	40,00%

The conduct of Indonesian cement industry has a tendency of middle aggressive competition; the seller or the manufacturer can determine the selling price of cement without government restrictions because they have a high market power; and the industry does not do a lot of product innovation but do innovation related to production efficiency.

The industry performance is assessed through the ROA that shows the industry's efficiency in using assets to generate profits. The ROA average value of Indonesian cement industry in the period 2005-2015was 18.10%, which indicated that the amount of profit earned by industry was fairly excessive.

There has been proven qualitatively and quantitatively for consistency among the three research variables. Qualitative test results indicated the relation equal to 40,00%, while the quantitative test results using multiple regression analysis showed independent variables

(structural and behavioral) simultaneously affected the dependent variable (performance) equal to 0.584 or 58,4%. The analysis toward the normative criteria of the structure, conduct, and performance more emphasized that the Indonesian cement industry has a tight oligopoly market structure.

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