IMPACT OF STRATEGY TYPE TOWARD THE FIRM PERFORMANCE: THE INDONESIAN CHEMICAL INDUSTRY EVIDENCE

BUDI SUPRAPTO

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

IMPACT OF STRATEGY TYPE TOWARD THE FIRM PERFORMANCE: THE INDONESIAN CHEMICAL INDUSTRY EVIDENCE

BUDI SUPRAPTO

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Impact of Strategy Type toward the Firm Performance: The Indonesian Chemical Industry Evidence

Budi Suprapto
Universiti Teknikal Malaysia Melaka

Abstract: *The purpose of this paper is to explore the types of strategy adopted by the firms and the impact of strategy Type upon firm performance. This paper is written based on the mail-survey of 79 firms in Indonesian chemical industry. Using factor analysis, the study found four strategic factors: technology and coordination, business expansion, competency and planning, and customer focus. Based on the result of cluster analysis, the sample firms can be grouped into three strategy typology: prospectors (23 firms), defender (34 firms) and reactor (22 firms).*
Results from One Way ANOVA Analysis indicated that ROA and Sales Growth are significantly different among strategy types. Moreover, Prospectors and defenders perform equally and significantly out perform reactors.

Keywords: Strategy, Performance, Industry

1.0 Introduction

Theory of different strategy types has emerged as an important research area in the field of strategic management (Miles and Snow, 1978; Porter, 1980). Theorists have studied the relationship between strategy type and the firm performance. They found that firm that there was a link between strategy and firm performance.

Miles and Snow's (1978) typology is one of the more important and popular typology of strategy. Miles and Snow contend that four basic pattern strategies (prospector, defender, analyzer, and reactor) emerge as orgánizations attempt to solve three recurring problems (entrepreneurial, engineering, and administrative), and that these strategies may be fitted on a continuum (Smith, 1986). Researchers wrote that their industry studies they found that organizational performance divers among them that adopt different strategy type.

This study investigated the way chemical firms in Indonesia develop strategy and how it influence to the firm performance. Moreover there are two topics will discussed here. First, the study will define strategic factors and cluster the firm in to strategy types. Second, the influence of strategy type to the firm performance will be investigated.

2.0 Theoretical Background and Hypothesis

2.1 Miles and Snow's Strategy Typology

Miles and Snow (1978) proposed a relatively complex strategy typology interrelating organizational strategy, structure, and process variables within a theoretical framework of co-alignment (Conant et al., 1990). They suggested a strategy typology, which took into account three interrelated problem of organizational adaptation (Veliyath and Shortel, 1993). They viewed the *adaptive cycle* characterizing this process as involving three imperative strategic problem solution sets: (1) an *entrepreneurial problem* set centering on the definition of an organization's product-market domain; (2) an *engineering problem* set focusing on the choice of technologies and processes to be used for production and distribution; and,

(3) an *administrative problem* set involving the selection, rationalization, and development of organizational structure and policy process (Conant et al., 1990). Combining these three adaptation problems and solutions yielded four strategy archetypes, which were named prospector, analyzer, defender, and reactor. The first three of strategy types, prospector, analyzer, and defender, are identified as stable strategy types. Prospectors are the most proactive firms in their posture on the most proactive on three adaptive cycles, meanwhile, defenders are the least proactive. Analyzer is an intermediate form or a mixed strategy type, combining elements of both defenders and prospectors. The fourth strategy type, reactor, is identified as an unstable strategy type due to no clear strategic focus.

Miles and Snow (1978) suggested that defender, analyzer and prospectors would be distributed about equally in a given industry, and that these types would be more prevalent than reactors (Zahra and Pearce II, 1990). This prediction has been contradicted by the empirical research results, as shown in Table 3-3. Different researchers reported significantly different distributions of the four strategic types.

Were strategic types and characteristics of the environment (industry situation) significantly associated? Zahra and Pearce (1990) were unable to find an association between the characteristics of the industry and the representation of different strategic types. He found that researchers differ considerably in their emphasis on the four strategic types. Of the 25 studies reviewed, only eleven (44%) investigated all four groups. Five studies (20%) reviewed only defenders and prospectors. Reactors have been ignored in eleven (44%) studies.

The Miles and Snow strategy typology has recently been the subject of much debate and research in strategic management (Slater and Naver, 1993, Zahra and Pearce, 1990). This typology has important implication for managers and scholars because it seems to represent a generic approach to business strategy very well (Slater and Naver 1993). Extensive use of this classificatory scheme in prior empirical effort (Gupta & Govindarajan 1986, Hambrick and Mason 1984, Miles & Snow 1978) has demonstrated its utility is explaining general business orientation at the business level (Bird & Beechler, 1994). Thus, this typology has been empirically examined and has been determined to be sound and inclusive in its representation of an organization's strategy (Rogers and Bamford, 2002). Moreover, the three adaptive cycle proposed by Miles and Snow (1978) has been used as strategic dimensions to examine the relationship between business strategy and natural environmental policy (Aragon-Correa, 1998). Based on those advantages, Miles and Snow (1978) typology is chosen the represent business strategy of the firms in this study.

2.2 The Relationship between Strategy and Firm Performance

A large number of studies examining the relationship between strategic types and organizational performance suggest that organizational performance will be (a) equal in defender, prospector and analyzer organizations; and, (b) higher than in reactor organizations (Conant et al, 1990, Zahra and Pearce, 1990, Smith et al., 1986). Some studies supported this proposition. Based on the study of the plastics, semiconductors, and automotive industries, Snow and Hrebiniak (1980) concluded that reactor strategy generally was associated with poor financial performance. They found that there was a significant difference in financial performance between reactors and

organizations employing either the defender, prospector or analyzer strategy. The studies by Hawes and Crittenden (1984) in the retailing industry also supported this preposition. Based on research in the HMO industry, Smith et al. (1989) found that in terms of overall performance and return on asset (ROA), defenders, analyzers, and prospectors performed significantly better that reactors.

Conant et al (1990) found that the subjective profitability evaluations of the managers in defender, prospector and analyzer organizations were not significantly different among themselves, but each was significantly greater than the evaluation of managers in reactor organizations. Woodside et al. (1999) found that reactors had lower average performance scores than defenders, analyzers and prospectors. He also noted that the performance of reactors was below these three archetypes because they fell into an unpleasant cycle of responding inappropriately to environmental change

One past study reported a contradictory result. The study by Snow and Hrebiniak (1980) in the air transportation industry found that reactors as a group not only performed above the mean level for all four strategies, they outperformed both defenders and prospectors. The result was consistent with the earlier finding that reactor strategy, generally not viable in competitive industries, is apparently feasible for industries that are protected in some way (e.g., through government regulation)(Snow and Hrebiniak, 1980).

Zahra and Pearce (1990) suggest that the link between Miles and Snow's typology and performance was not as straightforward as the typology suggests. At least three variables appear to confound the link between strategic type and performance: company size (Smith et al., 1989), environmental attributes (Hambrick, 1983), and the fit between strategy type and process (Segev, 1987a, 1987b). These reviews lead to the research hypothesis tested in this paper.

Hypothesis: The strategy typology will make significant difference to firm performance: defenders and prospectors are expected to have higher firm performance than reactors.

3.0 Method

3.1 Sample and Respondent

A bundle of questionnaire was sent to the CEO or senior manager of each firm in the Indonesian Chemical Industry. Recognizing the potential variance among managers' perceptions of strategy within the same organization (Snow and Hambrick, 1980), some researchers have argued that CEOs have the most realistic understanding of firm's strategic situations because they are the prime strategist (Rogers and Bamford, 2002, Aragon-Correa, 1998, Shortel and Zajac, 1990, Hambrick, 1981, Snow and Hambrick, 1981, and Andrews, 1971). This is especially evident in smaller organizations that consist the bulk of the sample, where the CEO will have a much clearer view of, as well as significant control over the strategic orientation of the firm.

3.2 Measurement and Scaling Design

A bundle of questionnaire that consists of 18 questions of Miles and Snow's strategy dimensions was used to measure the strategy. The questions were designed to cover the range of strategy that firm might follow. Using seven-point Likert scale, possible answers range from 1 to 7. Then, the respondent places his or her firm in an appropriate position in the range.

Firm performance was measured using a subjective self-report instrument made up of two scale items. The first scale

asked respondent to evaluate the return on Asset (ROA) of firm relative to their competitors. The second scale item asked respondents to evaluate his or her firm's sales growth. The sevent-point Likert scale was used to measure the firm performance compare to others in the industry. The response option for both scale range from 1 to 7. Then, respondent places his or her firm in an appropriate position in the range.

4.0 Result and Discussion

4.1. Strategy Types

Each firm's standardized scores on the 18 business strategy variables defined in 1, were subjected to principal component analysis. The author factor analyzed the items to capture the correlation between them and analyzed the items to determine whether it was possible to reduce the number of business strategy variables. A varimax rotation of factor analysis produced four significant factors, with eigenvalues greater than 1 that together explained a 59.127 % of total variance. Fourteen of the variables exhibited factor loading of more then the absolute value of 0.50 on at least one factor; Dess and Davis (1984) regarded such a value as common and very significant.

Results indicated that the eighteen strategy dimensions could be grouped into four factors. Some variables with high loadings on strategic factor 1 are V8 (the technology breadth of the firm), V17 (The procedure of the control system in the firm), and V18 (the form of coordination mechanism in the firm). The high loading items on strategic factor 2 were, V1 (the field within which the firm currently conducts its business), V2 (the capacity to monitor environment conditions, trends, and events of the firm), V4 (the firm's success posture in the industry), and V12 (the tenure

of member of domain coalition in the firm). On strategic factor 3, high loading items were, V10 (the competencies (skill), which firm's employees possess), V11 (the domain-coalition of the firm), and (planning in the firm). Finally, on strategic factor 4, items with high loading were V3 (the stability of customer base of the firm), V5 (the pattern of the firm's growth), V9 (the degree of routinization and mechanization of the firm's production process), V15 (the extensive division of labor in the firm) and V16 (the degree of structural formalization in the firm). Strategic factor 1 was labeled as technology and coordination, strategic factor 2 as business expansion, strategic factor 3 as competency and planning, and strategic factor 4 as customer focus. Table 1 provides the factor loadings of business strategy items for the final sample of 79 observations (4 observations were dropped due to incomplete data)

TABLE 1
Factor Loading of Strategy Dimensions

Strategy Dimension	Strategic Factor 1: Technology and Coordination	Strategic Factor 2: Business Expansion	Strategic Factor 3: Competency and Planning	Strategic Factor 4: Customer Focus
V1		.826		
V2	.432	.582		
V3				.708
V4		.607		
V5	.419			-.438
V6			.469	
V7	.417		.478	
V8	.737			
V9		-.470		.576
V10			.796	
V11			.759	
V12		.699		
V13	.431		.585	
V14				-.425
V15				.672
V16				.690
V17	.629			
V18	.814			
Eigen value	4.763	2.306	1.957	1.617
Percentage of variance explained	26.416	12.811	10.872	8.983

The score of all four factors of business strategy were then calculated and subjected to cluster analysis. The result was obtained by applying a non-hierarchical procedure known as k-means cluster to the number of groups to be adopted to Miles and Snow (1978) definition. The F Statistic was noted for each level of clustering and the appropriate number of clusters was identified on the basis of the inflection points in these statistics. Tukey's tests for multiple comparisons of means were then used to examine pairwise differences among the clusters along the four strategic factors. Table 2 describes the three clusters identified through the k-means clustering algorithm.

TABLE 2
Strategy Types

	Prospector	Defender	Reactor	F-value
Strategic Factor 1: Technology and Coordination	.78327	.19504	-1.63697	30.075
Strategic Factor 2: Business Expansion	.77994	.37365.	.13333	14.041
Strategic Factor 3: Competency and Planning	.15319	.43494	-2.26694	55.276
Strategic Factor 4: Customer Focus	-.46592	.31484	-.13496	5.405
Number of cases	23	34	22	

Cluster 1 firms scored the highest among all three clusters on business expansion and technology and coordination. They were the most innovative firms in the sample in the matter of business, technology and administration. Consistent with Miles and Snow (1978) typology, the 23 firms in this cluster were called Prospector. Cluster 2 firms scored the highest among all three clusters on customer focus and competency

and planning. They put emphasis on protecting their base business. Moreover, they also emphasized on planning process formality and reaching technical efficiency. Consistent with the description of such firm in Miles and Snow (1987) typology, the 34 firms in cluster 2 were labeled Defender. Cluster 3 firms displayed no consistent pattern in their strategies. They scored the lowest among all three clusters on business expansion, competency and planning, and technology and coordination. Hence the 22 firms in this cluster were called Reactor. As a comparative analysis, Rajagopalan's study (1997) of 50 US electrical companies found that defenders, prospectors and reactors were 19, 14 and 17.

4.2 Strategy Type and Firm Performance

The hypothesis predicted that there is difference in firm performance, both ROA and sales growth. Moreover, Miles and Snow (1978) proposed that reactors will have the lowest ROA and sales growth. This was tested with One-Way Analysis of Variance. The results are as predicted by the hypotheses and are reported in Table 3.

TABLE 3
Results of One Way ANOVA Analysis: Mean Scores and Standard Deviation between Strategy Type and Firm Performance

Strategy Type	N (79)	ROA		Sales Growth	
		Mean	Standard Deviation	Mean	Standard Deviation
Prospector	23	4.16	1.06	3.86	.66
Defender	34	4.65	1.12	4.28	1.00
Reactor	22	3.32	1.33	3.35	.97
F Statistic :		8.69***		6.99***	

Results showed that ROA and sales growth are significantly different among business strategy typology at the 1 percent level with an F statistic of 8.69 and 6.99 respectively. Reactors have the lowest score in terms of both ROA and sales growth. A

Tukey test indicated that in terms of ROA and sales growth, defenders and prospector are not significantly different. Moreover, Tukey test indicated that in term of both ROA and sales growth, defenders and prospector perform significantly better than reactor at the 5 percent test level. This finding is consistent with the conclusion reached by Miles and Snow (1978) that defenders and prospectors perform equally well and consistently out perform reactors.

5.0 Conclusion

5.1 Conclusion and Policy Implication

The empirical finding indicated four strategic factors; technology and coordination, business expansion, competency and planning, and customer focus, adapted in the Indonesian chemical firms. Then base on those strategic factors, the firms can be clustered in three types of Miles and Snow's strategies: prospector, defender and reactor. The study could not offer any insights with respect to analyzer. The absence of analyzer is due to the characteristics of Indonesian chemical industry as a low to moderate competitive industry.

The strategy type made a significant difference to firm performance. Moreover, prospectors and defenders perform significantly better than reactors. For the businesses, those findings indicated the importance of having consistent and purposeful strategy. As suggested by Miles and Snow (1978), the reactor strategy was proposed as unsuccessful strategy due to the inconsistency in strategy focus.

5.2 Limitations of the Study and Suggestions for the Future research

Interpretation of results represented is subject to a number of limitations. First, given that the business strategy type examines were limited to prospectors, defenders, and reactors, the study could not offer any insights with respect to forth business strategy type in the Miles and Snow typology, namely, analyzers. The future research needs to examine more competitive business environments where there is a greater likelihood of finding firms pursuing analyzer-type strategy.

Second, Most of the matrix cells in two-way ANOVA analysis contain less than 10 cases. It may produce difficulties in developing general conclusion of the study. The bigger sample size involvement is needed in the future research

6.0 References

[1] Miles, R.E., and Snow, C.C., *Organizational Strategy, Structure and Process*, (McGraw-Hill Book Company, 1978)

[2] Porter M.E., Green and Competitive Advantage: Ending the Stalemate, *Harvard Business Review*, September-October, 1995, 120-134.

[3] Smith, K.G., Guthrien, J.P., Chen, M., Miles and Snow's Typology of Strategy, Organizational Size and Organizational Performance, *Academy of Management Best Paper Proceeding*, 1986, 45-49

[4] Conant, S.J., Mokwa, M.P., and Varadarajan, P., Strategic Types, Distinctive Marketing Competencies, and Organizational Performance: A Multiple Measures-Based Study, *Strategic Management Journal, 11*, 1990,365-383.

[5] Zahra, S.A., and Pearce II, J. A., Research Evidence on The Miles-Snow Typology, *Journal of Management, 16*(4), 1990, 751-768.

[6] Slater J., and Angel, I.T., The Impact and Aplications of Environmental Linked Strategies on Competitive Advantage: A Study of Malaysian Companies, *Journal of Business Research, 47*, 2000, 75-89

[7] Hambrick D. C., Some Test of Effectiveness and Functional Attributes of Miles and Snow's Strategic Types, *Academy of Management Journal, 26* (March), 1983, 5-26.

[8] Bird, A., and Beechler, S., Links between Business Strategy and Human Resource Management Strategy in US-ased Japanese Subsidiaries: An Empirical Investigation, Journal *of International Business Stadies, First Quarter*, 1995, 23-46.

[9] Rogers, P.R., and Bamford, C.E., Information Planning Process and Strategic Orientation: The Importance of Fit in High-Performing Organizations, *Journal of Business Research, 55*, 2002, 205-215.

[10] Aragon-correa, J.a., Strategic Proactivity and Firm Aproach to the Natural Environment, *Academy of Management Journal, 41*(5), 1998, 556-567.

[11] Snow, C.C., and Hrebiniak, L.G., Strategy, Distinctive Competence, and Organizational Performance, *Administrative Science Quarterly, 25* (2), 1980, 317-336.

[12] Woodside, A.G., Sullivan, D.P., and TrappeyIII, R.J., Assessing Relationships Among Strategic Types, Distinctive Marketing Competencies, and Organizational Performance, *Journal of Business Research, 45*(2), 1999, 135-146.

[13] Snow, C.C., and Hambrick, D.C., Measuring Organizational Strategies: Some Theoretical and Methodological Problem, *Academy of Management Review, 5* (4), 1980, 527-538.

[14] Segev, E., A Systematic Comparative Analysis and Synthesis of Two Business-Level Strategies Typologies, *Strategic Management Journal, 10*, 1989, 487-505

[15] Shortell, S.M., and Zajac, E.J., Perceptual and Archival Measures of Miles and Snow's Strategic Types: A Comprehensive Assessment of Reliability and Validity, *Academy of Management Review, 33* (4), 1990, 817-832.

[16] Dess G. S., and Robinson, Jr., R B., Measuring Organizational Performance in Absence of Objective Measures, *Strategic Management Journal, 11* (July-September), 1984, 365-383.

[17] Rajagopalan, N., Strategic Orientations, Incentive Plan Adoptions, and Firm Performance: Evidence From Electric Utility Firms, *Strategic Management Journal, 18*: 1996, 761-785.

7.0 BIOGRAPHIES

Budi Suprapto is a senior lecturer at Institute of Technology management and Entrepreneurship, Universiti Teknikal Malaysia Melaka. He got his PhD in Strategic Management from Nanzan University, Nagoya, Japan in 2003 and his mater's degree (MBA) in 1998 at Asian Institute of Technology (AIT), Bangkok, Thailand. He started his academic career as a permanent lecturer at Universitas Atma Jaya Yogyakarta, Indonesia in 1993 soon after finishing his degree in management in the same university. His current research interests are in the field of strategic management and technology management.