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How do strategic groups handle cognitive complexity to sustain competitive advantage? A commentary essay

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ABSTRACT

Cheng and Chang [Cheng SL, Chang HC. Performance Implications of Cognitive Complexity: An Empirical Study of Cognitive Strategic Groups in Semiconductor Industry. Journal Business Research 2009-this issue] empirically investigate how a strategic group's cognitive complexity affects firm performance in the context of Taiwan's semiconductor industry. This commentary essay explores the authors' contribution to the multidisciplinary strategic group literature. The commentary also considers how Cheng and Chang's results can be integrated with important work in the competitive dynamic studies.

The study by Cheng and Chang (2009) works at the core of research on cognitive strategic groups, drawing smoothly from multiple literatures and disciplines. Their study focuses on the effect of cognitive complexity of strategic groups on sustaining competitive advantage. The authors present a rigorous empirical analysis that underlies the well-developed groundwork for future studies in a fascinating and under-developed area.

Researchers increase understanding of the rationale of strategic group formation, for example, structural factors such as mobility barriers within an industry (Caves and Porter, 1977; Porter, 1979). Recently, an increasing number of studies focus on the effect of psychological factors such as cognitions of managers or top management teams (TMTs) (i.e., cognitive strategic group) on firm performance (McNamara et al., 2002; Neill and Rose, 2006; Osborne et al., 2001). However, researchers discuss but do not fully investigate the issue of what constitutes the managerial similarity judgment for developing strategic groups (Osborne et al., 2001). Particularly, the question of which specific forms of cognitive strategic groups can help firms to sustain competitive advantage over time under different environmental conditions has not been examined. This is the research gap that Cheng and Chang address. They assert that cognitive strategic groups with dual orientations toward customers and products can sustain competitive advantages over a period of time, especially during the period of market downturns and uncertainty.

Earlier strategic group research criticism focuses on the issue of methodological artifact with limited theoretical development. However, by incorporating the concept of the cognitive strategic group, Cheng and Chang's study, like other prior studies such as Nath and Cruca (1997) and Osborne et al. (2001), confirms that the strategic group concept is a theoretical construct instead of a method artifact of clustering analysis. The concept of the cognitive strategic group contributes to our understanding not only of how managers or TMTs perceive and interact with the external environment but also of how to create a shared cognitive complexity and formulate a strategic plan within such environment. It helps business practitioners to interpret environmental events, such as pricing wars, and to identify competitors in the markets.

Cheng and Chang predict that a strategic group with higher degree of cognitive complexity would have higher performance. Prior studies suggest that a simple-oriented cognition is more preferred for managers due to limitations of information processing (March and Simon, 1958; Schwenk, 1984) or effective response to environmental challenges (Miller, 1993). Nevertheless, facing a fast changing and highly diverse environment, it may be insufficient for managers or TMTs with a simple-oriented cognition to deal with such unexpected and multi-dimensional challenges. Managers or TMTs with a complex-oriented cognition are more capable of elaborating a whole picture to take a more accurate action in responding to a fast changing and highly diverse environment. For instance, when a technological change takes place, managers with a complex-oriented cognition of research and development (R&D)/marketing can better capture the technological trends and customer needs than ones with a simple-oriented cognition of R&D or marketing. Cheng and Chang's study targets this interesting topic and supports their argument with empirical results. Their findings assert that firms focusing on dual orientation, such as customer's need and product demand, have higher performance than firms focusing on single orientation, such as operation, or non-focusing firms when an environmental change occurs.

Cheng and Chang also predict that firms focusing on external-related dimensions have better performance than firms focusing on

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internal-related dimensions. As shown in their findings, higher-performing firms tend to analyze more external-related factors, such as customer's need and product demand, while lower-performing firms are locked in maladaptive behaviors by focusing on internal factors, such as operation. This implies that managers or TMTs with an external-dimensional cognition are more capable of taking a more accurate action in responding to a fast changing and highly diverse environment, which in turn helps firms to sustain competitive advantage. Cheng and Chang advance our understanding on the knowledge structure of cognitive strategic groups by differentiating between internal and external dimensions. Business practitioners can learn from this study that external-related dimensions of cognition, such as customer and product, can allow firms to promptly respond to the rapid environmental change, and then in turn compete with their rivals and attain superior performance. For instance, since touch-panel display technology is more advanced and ready-to-apply, the TMTs of Apple Inc. sensed its potential application for consumers or products and then utilized this technology on iPod and iPhone, thus helping Apple Inc. to sustain superior performance in the marketplaces.

The study of Cheng and Chang, following the suggestions by prior studies (Osborne et al., 2001), utilizes computer-aided content analysis to specify thematic dimensions as the measurement of managers' mental models identified via letters to shareholders in Taiwan's semiconductor firms. Although the design of the research method is similar to the method in the study of Osborne et al. (2001), Cheng and Chang further provided a research flow chart, which helps researchers to understand how they conduct this research. This flow chart also offers a clear methodological picture for researchers working with this type of research.

1. Some queries

Cheng and Chang predict that performance level and the degree of cognitive complexity of strategic groups are positively correlated. Their findings suggest that *dual-oriented* cognitive complexity of strategic groups outperform the simple-oriented or non-focused cognitive complexity of strategic groups. To some extent, the authors shrewdly point out that the degree of cognitive complexity of strategic groups is positively associated with performance. Their study assumes that there is a linear relationship between the degree of cognitive complexity and performance. However, considering the limitations of information processing (March and Simon, 1958; Schwenk, 1984), as in Cheng and Chang's earlier arguments in the study, perhaps the degree of complex dimensions of managers' mental models is positively associated with performance when complexity is low but will be negatively associated with performance as the complexity increases. As a result, is an inverse U-shaped relationship possible between the degree of cognitive complexity of strategic groups and performance? Future studies need to verify this possibility of a non-linear relationship between the degree of cognitive complexity of strategic groups and performance.

Cheng and Chang also predict a positive relationship between the multitude of perceived external-related dimensions of managers and performance. Their findings suggest that firms possessing the external-related dimensions, such as customer needs and product demand, outperform firms possessing the internal-related dimensions, such as operation. However, the study of Cheng and Chang did not directly examine the linear relationship between the degree of internal/external dimensions and performance but compared the performance of strategic groups with external-related cognitive dimensions with the performance of strategic groups with internal-related cognitive dimensions. This study operationally defines customer and product as external-related dimensions and operation as an internal-related dimension without a detailed explanation, which is somewhat intuitional. Why is *product* categorized as an external-related dimension instead of an internal-related dimension? Future research needs to clearly define and develop the measure for the degree of external/internal dimensions as well as to investigate whether there is a linear relationship between the degree of external-related cognitive dimensions and performance.

Finally, Cheng and Chang also note that though some studies investigate the performance of strategic groups in a specific environment, such as a stable market condition or a significantly changing environment, few studies examine multiple market conditions, for example, in periods of market downturns, uncertainty, and upturns. Although Cheng and Chang use four different periods of years to interpret the periods of market downturns, uncertainty, and upturns, they did not explain how different environmental conditions, together with the degree of cognitive complexity and the degree of external/internal related dimension, affect performance. In fact, Reger and Palmer (1996) investigate whether environmental turbulence increases a greater diversity of the dimensions that managers contemplate. Perhaps the authors can compare their results with Reger and Palmer's (1996) study.

Although this commentary raises some queries, the queries do not lessen the contribution of Cheng and Chang's research in the area of cognitive strategic group studies. On the contrary, inspired by the Cheng and Chang's research, future cognitive strategic group studies are encouraged to integrate the above unanswered puzzles as Fig. 1 shows.

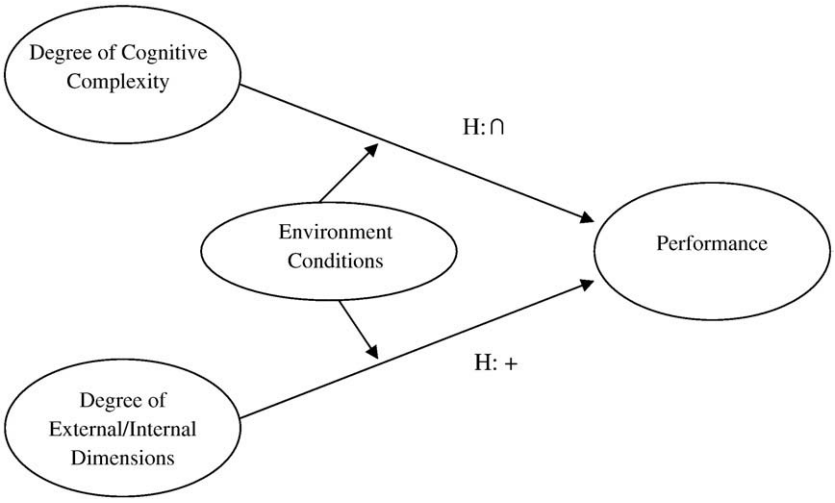

Fig. 1. Future research directions.

2. Looking back and looking ahead

Since the 1980s, one basic question catching the attention of both strategic management researchers and business practitioners is "With whom and how do firms compete?" This question is addressable from several different theoretical perspectives, such as industry, group, and firm-level factors. This field of research traces back to the industrial organization's (IO) structure-conduct-performance (S-C-P) paradigm (Bain, 1956; Mason, 1957). The S-C-P paradigm asserts that the structure of the industry influences firms' strategic behaviors, which in turn influence their performance, but the paradigm receives criticism for not answering why firms in the same industry have different levels of performance. Thus, the concept of strategic groups successfully supplements this research gap.

Hunt (1972) raises this concept and investigates it in the household-appliance industry. Strategic group study suggests that given the similarities of resources, firms within a strategic group are expected to pursue the same competitive strategies, which in turn lead to homogeneous performance. On the contrary, firms in different strategic groups are likely to pursue different competitive strategies, which in turn result in heterogeneous performance. Nevertheless, this strategic group approach also fails to explain whether the decision-makers in firms possessing similar asset configurations share similar mental models of the competitive environment within their industry and whether the firms in the same strategic group choose similar strategic paths (Thomas and Pollock, 1999). Therefore, the literature introduces the concept of cognitive community (so called cognitive strategic group) to elucidate how the mental models of managers in individual firms help to shape the competitive structure of industries (Porac et al., 1989).

Another area of the competitive dynamic study also elaborates how firms compete with rivals, such as attack and response, at the level of the firm (Miller and Chen, 1994, 1996). Researchers extend and integrate competitive studies with the resource-based or competence-based framework to explain how to identify competitors (Chen, 1996; Peteraf and Bergen, 2003; Thomas and Pollock, 1999). Chen (1996) uses market commonality and resource similarity to identify how a pair of competitors competes with each other while Peteraf and Bergen (2003) employ market needs correspondence and capability equivalence for competitor identification. As can be seen, competitive dynamic studies have widely investigated various levels, such as industry level, group level, and firm level. Cheng and Chang's study, based on the group level, enriches our understanding of how strategic groups with cognitive complexity sustain competitive advantage.

Cheng and Chang's study also inspires some future research directions that deserve investigation. First, as for the theoretical perspective, while prior studies investigate how or with whom firms compete from the different levels of industry, group, and firm, future studies should adopt a more integrated view of these different levels to explore how firms compete with other firms inside or outside of the same groups in an industry. Particularly, mental models of managers or TMTs are useful not only to identify cognitive strategic groups, but also to ascertain individual firms' competitors. Researchers can use the same mental models of managers or TMTs to identify strategic groups and individual competitors simultaneously. For instance, by incorporating Cheng and Chang's external and internal cognitive dimensions into Chen's (1996) market commonality and resource similarity respectively, researchers not only can identify strategic groups and individual competitors simultaneously but also can investigate the interaction effect of strategic groups and individual rivalry on performance.

From a methodological perspective, to calibrate Cheng and Chang's findings with those of other cognitive strategic group studies, researchers should consider how to measure mental models of managers or TMTs, particularly how managers evaluate their environments and then formulate strategic plans. Thus, the constructs or dimensions developed by Cheng and Chang provide a useful guideline for future research. Computer-aided content analysis is useful for specifying cognitive dimensions of managers or TMTs from letters to shareholders can also be used to measure other constructs such as resource similarity and market commonality for examining the individual rivalry. Cheng and Chang's external and internal dimensions of managers' mental model can further extend the single dimension of market and resource suggested by the prior researchers.

As for the business practice perspective, the question of, "With whom and how do firms compete?" is an important question for firms' managers and TMTs. In a fast changing environment, particularly in the semiconductor industry, a simple cognitive dimension of managers or TMTs may be insufficient to cope with such highly violent environments. A more complex external cognitive dimension of managers' mental models can help firms to sustain superior performance. Cheng and Chang's study crafts such a practical approach to verify the relationship between external/internal cognitive complexity and firm performance. Future research needs to identify the underlying drivers of these external or internal cognitive dimensions with regard to competitive advantage. A research that explains prior theoretical themes and provides a feasible research method for verification is a true contribution to the academia. Cheng and Chang have done their jobs.

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