Achieving requisite variety in modeling firms’ strategy heterogeneities: Explaining paradoxical firm-market performances

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A R T I C L E  I N F O

Dedication: This article is dedicated to the exceptionally fruitful careers of Peter J. LaPlaca and Karl E. Weick and their respective espousing of the “total firm entity” and “requisite variety” perspectives for advancing theory construction and analysis of strategy heterogeneities. The authors appreciate the helpful comments and insights of the reviewers on earlier drafts of this paper.

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- Complexity theory
- Strategic modeling
- Complex outcome conditions
- Firm performance
- Firm heterogeneity

A B S T R A C T

This study responds to the view that the crucial problem in strategic management (research) is firm heterogeneity—why firms adopt different strategies and structures, why heterogeneity persists, and why competitors perform differently. The present study applies complexity theory tenets and a “neo-configurational perspective” in proposing firms’ complex antecedent conditions affecting firms’ complex outcome conditions. The complex outcome conditions include firms with high financial performances in declining markets and firms with low financial performances in growing markets—the study focuses on seemingly paradoxical firm-market outcomes. Based on an analysis of firm strategies and outcomes for separate samples of cross sectional data of 1120 Finish and Hungarian manufacturing firms, this study bridges theory and practice in strategic management of complex firm-orientation configurations and complex firm-performance-capabilities. The study contributes by showing how executives can use “computing-with-words” (CWW) (Zadeh, 1966) for achieving requisite variety in explaining and predicting paradoxical firm performance outcomes.

1. Introduction

LaPlaca (1997) emphasizes that firms succeed or fail as total firm entities rather than individual components. LaPlaca (1997: 180) illustrates this total firm entity perspective with Blois’s (1985) study; Blois shows that new manufacturing capabilities are useful in creating distinctive competence only of marketing teams aware of these capabilities and can translate them into effective selling propositions aimed at specific market needs. Yet, most of the literature in industrial marketing and strategic management focuses on deconstructing total firm entities to learn the relative sizes of the contributions of individual components (by using symmetric tests such as analysis of variance, conjoint, cluster, regression or factor analysis). The present study is radically different from the current deconstruction dominant logic; the present study actually matches case-based theory with case-based analytics in examining total firm entities. The aim is to demonstrate how to achieve the “requisite variety” (Weick, 2007) necessary for increasing the powers of explanation, description, and prescription in theory creation and analysis to solve the “crucial problem” in the disciplines of industrial marketing and strategic management. The study conjoins two perspectives as a foundational stance for advancing strategic management research. The first perspective is Powell, Lavallo, and Fox’s, (2011: 1370) proposal, “Strategy theory has converged on a view that the crucial problem in strategic management is firm heterogeneity—why firms adopt different strategies and structures, why heterogeneity persists, and why competitors perform differently.” That is, the need exists to recognize the firms are distinct in constructing both theory and analyses of firms’ strategies in various contexts, yet still be able to generalize findings to segments of firms in contexts. The second perspective expands on Weick’s (1987, 2017) advocacy of nurturing requisite variety into theory construction. “The importance of a head full of theories is that this increases requisite variety. By that I mean that it takes a complicated sensing device to register a complicated set of events” (Weick, 2007: 16).
The present research focuses on the study of paradoxical complex outcomes: firms growing in revenue in declining markets and firms declining in revenue in growing markets. Empirical research on corporate strategies in declining markets is scarce (Anand & Singh, 1997). The market differentiates among the types of valuable actions taken by firms (i.e., using existing resources in new ways to create organic growth), especially for firms exhibiting contrarian performance moves in their principal markets—experiencing declining performance in growing markets or improving performance in declining markets (Morrow, Sirmon, Hitt, & Holcomb, 2007). The study here builds and empirically tests case-based causal models of both complex outcomes.

The firm heterogeneity problem has been stubborn in solving in the strategic management literature due, in part at least, to the reliance on explaining and describing the sizes of linear relationships rather than accurately indicating (complex) precise outcomes—and the general mismatch between case-focused theory and relationship-focused analytics (cf. Fiss, 2007, 2011; Misangyi, Weaver, & Elms, 2008). For solving the firm heterogeneity problem, the present study proposes nurturing requisite variety in both theory and analytics by focusing on describing conjunctural, contrarian (rather than simple linear), outcomes and complex antecedent conditions (i.e., identifiable screens) indicating such contrarian firm behavior. While not proposed in the present study, such screening procedures are desirable to include inverted “U” impact of a simple condition (e.g., price) given that ex ante theory includes such propositions. The focal contrarian outcomes are firms performing well in declining markets and firms performing poorly in growing markets. The study contributes by constructing and testing contextual case-focused theory of complex outcome conditions. The study also contributes by applying complexity theory tenets in expressing firmographic and resource configuration as initial, first-layers guiding firm orientation and firm capability configurations as precursors to the two contrarian firm outcomes. Finally, the study contributes by examining theoretical propositions empirically for two national (Finland and Hungary) samples of manufacturing firms—a methodology permitting cross-validation of models via separate samples of cases. The study’s theory construction and data analytics illustrate substantial progress in solving the firm heterogeneity problem by moving away from rather shallow, linear, symmetric theory construction and testing to deeper, configurational, asymmetric theory construction and testing.

Following this introduction, Section 2 describes core tenets of complexity theory as a fundamental building block for configuration research. Section 3 presents concepts in the conceptual model capturing complex configurations of firmographics, firm resources, strategic orientations, firm capabilities, and output conditions. The fourth section, adopting a set-theoretic approach to strategic management, illustrates how different organizational configurations may lead to sales growth in declining markets or sales decline in growing markets. Section 5 presents a series of complex core propositions that indicate specific configurations of complex strategy configurations (i.e., screens) supported by theory that the study then tests empirically. Section 6 describes an empirical study that tests core propositions in the general theory. Section 7 presents the findings. Section 8 concludes with a general discussion of the findings, limitations, and offers and suggestions for future research.

2. Complexity theory and set-theoretic approaches

In set-theoretic methods, cases are conceptualized as combinations of attributes and it is these very combinations that give cases their unique nature (Ragin, 2000). Set-theoretic methods are distinct from conventional, variable-based approaches in that they do not disaggregate cases into independent, analytically separate aspects, but treat complex configurations as distinct types of cases. To examine different configurations of attributes Boolean algebra is used that permits the algebraic manipulation of logical statements, thus, providing a better understanding of complex organizational phenomenon and also allows for a sophisticated assessment of how different causes combine to affect relevant outcomes.

The advantages of set-theoretic methods over variable-focused data analytics are that the former stress nonlinearity, synergetic effects, and equifinality (i.e., reaching the same outcome from different antecedent routes), while empirical symmetric analysis (e.g., regression analysis) assumes linearity, additive effects, and unifinality (Fiss, 2007). Although not considered by earlier studies (cf. Fiss, 2007; Ordanini, Parasuraman, & Rubera, 2014; Ragin, 2008), complexity theory provides a theoretical foundation for set-theoretic methods (i.e., configurational analysis and recipes) in organizational studies and strategic management (cf. Anderson, 1999; Davis, Eisenhardt, & Bingham, 2007, 2009; Woodside, 2014). Misangyi et al. (2016) contend that set-theoretic methods constitute to an emergence of a “neo-configurational” perspective by studying management and organizational problems through an empirical investigation of causal complexity with the logic of set-theory.

Complexity theory includes the following four tenets. First, complexity theory includes the proposition that multiple paths lead to the same outcome (i.e., equifinality occurs). Alternative asymmetric combinations of indicators (i.e., algorithms) are identifiable as being sufficient but no one combination is necessary for predicting the occurrence of a specific outcome decision. The second tenet of complexity theory is that, “relationships between variables can be non-linear with abrupt switches occurring, so the same ‘cause’ can, in specific circumstances, produce different effects” (Urry, 2005: 4). Third, the complexity turn in strategy theory includes the tipping-point tenet (Gladwell, 2002; Urry, 2005). The tipping-point tenet specifies that if a system passes a particular threshold with minor changes in the controlling variables, switches occur similar to a liquid turning into a gas, a large number of apathetic people suddenly tip into a forceful movement for change (Gladwell, 2002). “Such tipping points give rise to unexpected structures and events whose properties can be different from the underlying elementary laws” (Urry, 2005: 5). In models of strategy theory, such tipping points involve replacing a negative with a positive response to one issue in a string (path) of questions within a given complex configuration of antecedent conditions. Fourth, causal asymmetry occurs, that is, indicator configurational models that predict a high performance accurately for a subset of firms are not the mirror opposites of the indicator configurational models that predict accurately a low performance by a subset of firms. Separate modeling for each (high and low performance outcomes) is necessary (Woodside, 2014).

This modeling approach builds from the proposition that combinations of causal conditions contribute to obtaining high effectiveness—a single condition is necessary or sufficient for achieving high effectiveness (Ketchen, Thomas, & Snow, 1993; Meyer, Tsui, & Hinings, 1993). This perspective allows for the investigation of conjunctural causality, equifinality, contributory reversals in impact (i.e., high X contributes to high Y as well as low X contributes to high Y in different configurations), and causal asymmetry (Fiss, 2011; Ragin, 2008). “Conjunctural causality” means that an outcome is seldom attributed to a single cause but can be explainable by sets of causal conditions that altogether combine in a collection of sufficient configurations for the outcome condition (Ragin, 2008; Zadeh, 1966)—whereby the occurrence any one is necessary. “Computing with words” (CWW) (Zadeh, 1996) is an expression for conjunctural causality that serves to identify a subset cases from a population of cases where membership in the subset uniquely exhibit a set of features that indicate the same outcome of interest.

Fig. 1 is a visual synopsis of the configurational theoretical/analytical thinking, testable propositions, analyses, findings, and contributions of the present study. The following discussion presents relevant literature and develops theory for each of the initial, intermediate, and outcome complex conditions appearing in Fig. 1.
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