

**COMPLEMENTARITIES WITHIN THE COMPETITIVE REPERTOIRE: A
LONGITUDINAL STUDY IN GROCERY RETAILING**

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ABSTRACT

Drawing on competitive dynamics research, this study investigates how firms exploit complementarities among competitive activities to attain and sustain competitive advantage. The concept of competitive repertoire highlights the notion that the value individual competitive actions cannot be separated from the whole. This raises the issue of managing complementarities within the competitive repertoire. The purpose of the paper is to facilitate understanding and managing these complementarities by developing and testing a framework for systematically identifying and assessing complementarities within a firm's competitive repertoire. We analyze the competitive repertoires of grocery retailers over fifty years. Over the extensive time period, we find support for the existence of complementarities between strategic (retail format) decisions and tactical (advertising) market activities and fail to find other types of complementarities. The concept of complementarities is shown to be a useful basis for developing theory of how competitive actions contribute to firm performance.

INTRODUCTION

There is anecdotal evidence that the competitive advantage of celebrated firms, including Urban Outfitters (Porter & Siggelkow, 2008), Southwest Airlines (Porter, 1996) and Wal-Mart (Bagwell & Ramey, 1994) is the outcome of effective exploitation of complementarities among systems of competitive activities. Complementarities among competitive activities is not only a source of unique value (Roberts & Amit 2003), but also a barrier to imitation (Porter, 1996; Rivkin, 2000; Stieglitz & Heine, 2006) and organizational change (Siggelkow, 2001). The concept of complementarities underpins also classic and contemporary works on strategic management (Adegbesana, 2009; Porter 1980; Porter & Siggelkow, 2008), strategic marketing (Moorman and Slotegraaf, 1999; Narver and Slater, 1990; Vorhies and Morgan, 2003), marketing management (Borden 1964; Clark, 1999), and retailing (Gauri et al. 2008; Smith et al., 1995). In the competitive dynamics research area, there has been increasing interest to study repertoires and sequences of competitive actions from a holistic perspective (Rindova et al., 2010).

The challenge facing a firm is to move beyond anecdotes and slogans to systematically identify and exploit complementarities among its competitive activities. However, (sustainable) complementarities tend to be idiosyncratic (Ennen & Richter, 2010). On the one hand complementarities that yield competitive advantage are imitated by competitors which renders them typically transient (Jacobson, 1992). On the other hand, because the difficulty of imitation increases with the complexity of the set of complementarities, sustainable complementarities tend to be very specific (Rivkin, 2000).

Complementarities are, therefore, difficult to predict and manage (Milgrom & Roberts, 1990). As a step towards making complementarities more amenable to empirical analysis and practical use, the purpose of the article is to introduce a conceptual and analytical framework (i.e. way of thinking and measuring) complementarities within a firm's competitive repertoire. We focus on the competitive

activities undertaken in the marketplace that are consequently observable by competitors and customers (Varadarajan, 2010). Our framework integrates elements from research on competitive dynamics (Chen, 2009; Smith et al., 2001), complementarities (Ennen & Richter, 2010) and organizational configurations (Short et al., 2008). We show how complementarities may arise over time, among similar and across different types of market activities as well as in relation to rivals' marketing activities. To our knowledge, our study is the first to discuss and systematically identify complementarities relating to competitive repertoires from an integrative perspective.

Beyond constructing a framework for thinking about complementarities, we identify complementarities on the basis of longitudinal data on market performance and competitive market activities. By taking a longitudinal perspective, we are able to investigate the extent to which complementarities yield sustainable (vs. transient) competitive advantage (cf., Jacobson, 1992). Our empirical research site is the grocery retail market in a North European country. We analyze a unique, manually collected dataset encompassing the market activities of the four largest companies in the market, constituting over 90 percent of the total market, over a fifty-year research period from 1955-2004.

THEORETICAL FRAMEWORK AND HYPOTHESES

Management of complementarities within a firm's competitive repertoire

The starting point of competitive dynamics research is that firms attain and sustain competitive advantage by taking competitive actions (Smith et al., 1991). As an extension to this notion, the concept of competitive repertoire emphasizes the fact that the value of individual competitive activities cannot be separated from the whole (Miller & Chen, 1994; Porter, 1996). Research has investigated the performance implications of competitive repertoires by investigating repertoires' volume (Young et al., 1996), simplicity/complexity (Basdeo et al., 2006; Ferrier et al., 1999; Miller & Chen 1996a), inertia/unpredictability (Miller & Chen, 1994) and nonconformity (Deephhouse, 1999; Miller & Chen,

1996b; Norman et al., 2007). These concepts *de facto* reflect how multiple competitive actions combine to influence performance. Still, researchers have not explicitly considered the complementarities within the repertoire as a source of competitive advantage. Rindova et al. (2010) makes an exception in that it considers how investors perceive sequences of multiple competitive actions from a holistic perspective. We build on the perspective of Rindova et al. (2010) by explicitly considering how the complementarities in the competitive repertoire act as a source of competitive advantage in market competition (Ennen & Richter, 2010).

Earlier research has constructed competitive repertoires on the basis of a priori action types and coding competitive actions from news items (Smith et al., 2001). By focusing on actions that are reported in the news, research has focused effectively on deviant (i.e. newsworthy) actions while ignoring more ‘ordinary’ methods of competition (e.g. configuration of the marketing mix). This choice is in alignment with the Austrian economics perspective on innovative actions as a source of competitive advantage (Jacobson, 1992). However, the other side of the coin is that firms also engage in more mundane competitive activities that are employed on a (more) routine basis to stay competitive (Becker, 2005). In this study, we focus on the latter kind of competitive repertoire, specifically, on the firm’s market activities that as a whole reflect its approach to creating, delivering and communicating value to customers (Roberts & Amit 2003; Varadarajan 2010).

Complementarity refers to “the beneficial interplay of the elements of a system where the presence of one element increases the value of others” (Ennen & Richter, 2010: 207). Traditionally, complementarities have been identified among strategies, structures and environments (Drazin & Van de Ven, 1985) though recent literature has paid attention to complementarities at lower levels (Porter & Siggelkow, 2008) which is also the focus of this paper. For instance, Ichniowski, Shaw, and Prennushi (1997: 291) identified that “complementary human resource management (HRM) practices have large

effects on productivity, while changes in individual work practices have little or no effect on productivity” Vorhies and Morgan (2003) show that business strategies should be coupled with complementary organizational structures for marketing. Olson et al. (2005) showed how managerial orientations interact with business strategies and organizational structures. Finally, Kabadayi et al. (2007) demonstrated that the design of the firm’s distribution channel system should complement its strategy and environment to improve performance. In summary, as pointed out by Ennen and Richter (2010: 208), “complementary relationships among heterogeneous factors in organizations may be powerful performance drivers” The authors argue that “complementarities are systems-specific phenomena that result from the embeddedness of individual characteristics in the organizational nexus of relationships among multiple elements.” (ibid.)

Building on the systems-level complementarity perspective, we define competitive repertoire as the system of interdependent market activities that the firm employs to attract and retain customers (cf., Miller & Chen, 1994). Changing and maintaining a particular competitive repertoire reflects the firm’s positioning vis-à-vis competitors (Grimm et al., 2005; Miller & Chen, 1996a), as well as its degree of strategic commitment (Miller & Chen, 1994; Roberts & Amit, 2003) or responsiveness to competitive pressures (Chen & MacMillan, 1992; Kraatz & Zajac 2001). We analyze both strategic and tactical market activities of the firms. Prior competitive dynamics literature has shown that strategic and tactical competitive actions differ in the logic in which firms employ them and how they influence firm performance (Smith et al., 1991; Chen et al., 1992; Miller & Chen, 1994; Miller & Chen, 1996a). In the present empirical context (grocery retailing) we focus on two major market activity types: the retailer’s format strategy represents its strategic repertoire and advertising tactics represent the firm’s tactical repertoire. The research framework is shown in Figure 1. We define the retailer’s format strategy as the configuration of different store formats it uses to compete in the aggregate-level (e.g. national) market

(Bhatnagar & Ratchford, 2004; Gauri et al., 2008; Gonzales-Benito et al., 2005). The advertisement tactics are defined by the types and volumes of advertising used by the retailer to build brand image and increase sales (Leeflang et al., 2009).

- INSERT FIGURE 1 HERE -

Our analytical strategy is to analyze what we collectively term the *configurational characteristics* of competitive repertoires (cf., Rindova et al., 2010). The configurational characteristics describe ways to configure market activities so as to exploit complementarities arising in different ways. We characterize complementarity as a systems-level phenomenon (i.e. pertaining to multiple interdependent elements) (cf., Porter & Siggelkow, 2008). Hence, our approach is related to configurational methods such as deviation analysis (Doty et al., 1993), cluster analysis (Ketchen et al., 1993) and qualitative comparative analysis (Fiss, 2011), as these methods emphasize the multidimensionality of organizational configurations (Fiss, 2007). However, we do not identify specific performance-optimal configurations of competitive activities but instead use the configurational characteristics to assess how the activities fall into consistent patterns (cf. Miller, 1996; Zott & Amit, 2007).

Complementarities within strategic and tactical repertoires

There may be complementarities *within* the firm's strategic and tactical repertoires separately.

Repertoire volume is defined as the total number of distinct activities employed by a firm (Young et al. 1996). *Ceteris paribus*, repertoire volume captures an aspect of complementarity: a high repertoire volume, characterized by a large number of market activities, is beneficial if the economies of scale exceed the cannibalizing effects between the distinct activities. A large repertoire of market activities is not always beneficial. In the marketing literature, for instance, it has been shown, for instance, that brand portfolios often include a small number of highly profitable brands and a large number of brands with poor performance (Varadarajan et al., 2006). The same applies for customer portfolios (Homburg

et al. 2008). Conversely, studies of competitive dynamics have shown a positive, linear relationship between the volume of competitive repertoires and performance (Young et al. 1996; Derfus et al. 2008). We conjecture that the sheer number of distinct market activities will be unrelated to performance.

Hypothesis 1a: Volume of the strategic competitive repertoire has no effect on relative market performance

Hypothesis 1b: Volume of the tactical competitive repertoire has no effect on relative market performance

The second configurational characteristic relating to complementarities within the strategic and tactical repertoires considered is repertoire *simplicity*, defined as the degree to which the firm makes use of a concentrated (vs. diverse) set of market activities in a given time frame (Miller and Chen 1996b). The concept of repertoire simplicity provides a way to assess the extent to which different types of market activities are compatible (and mutually reinforcing) vs. substitutes. To the extent that simplicity improves performance, it can be said that different types of market activities are substitutes. However, when simplicity affects performance negatively, it indicates that there are complementarities across different types of market activities. In the marketing literature, for instance, it has been suggested that having a broad repertoire of distribution channels improves market coverage but tends to confuse and irritate consumers (Frazier 1999). In other words, distribution channels may be complementary from the market coverage perspective but substitutes in the consumers mind. Moreover, branding studies typically assume that simpler marketing programs will mitigate the risk that brand equity is diluted (Buchanan et al. 1999). On the other hand, studies of the simplicity of competitive repertoires have broadly shown that simplicity hurts firm performance (Miller and Chen 1996b; Ferrier et al. 1999; Basdeo et al., 2006; Ndofor et al., 2011), though the results are not unequivocal (Ferrier & Lyon 2004;

Rindova et al., 2010). These results could be explained by the fact that firms often have to combine different types of actions (e.g. a product launch coupled with an advertising campaign) for any of them to have an effect. However, this is not often explicated in the literature. We suspect that the complementarities within the strategic and tactical repertoires considered separately change over time so that simplicity is unrelated to performance. Namely,

Hypothesis 2a: Simplicity of the strategic competitive repertoire has no effect on relative market performance

Hypothesis 2b: Simplicity of the tactical competitive repertoire has no effect on relative market performance

Complementarities over time within strategic and tactical repertoires

Consider the dynamics of the competitive repertoire and complementarities over time. Firms have to build competitive advantage over time, while, at the same time, maintaining a sufficient level of flexibility so as to accommodate environmental changes. In the former case the competitive repertoire complements past behavior, whereas in the latter event flexibility is a way of exploiting complementarities between the firm's repertoire and environmental dynamics. The concept of dynamic fit captures the essence of this dimension as the optimal rate of organizational change is contingent on organizational and environmental factors (Zajac et al., 2000). Competitive action researchers have investigated this issue using concepts such as competitive inertia (Miller & Chen 1994) and attack unpredictability (Ferrier, 2001). We define competitive repertoire unpredictability as the rate at which the composition of the competitive repertoire changes from year to year. For instance, in advertising, an unpredictable competitive repertoire is characterized by large year-to-year changes in the composition of the advertising tactics used by the firm. In the competitive dynamics literature, the general finding has been that flexibility, as indicated by speedy competitive responses (Chen & MacMillan, 1992) and

strategic unpredictability (Ferrier & Lee, 2002) is beneficial for focal firm performance and detrimental for the rivals. We predict that in the long term, firms will switch back and forth between building and the past and adapting to environmental changes which will be reflected in the fact that unpredictability of competitive activities is unrelated to performance. Hence:

Hypothesis 3a: Unpredictability of the strategic competitive repertoire has no effect on relative market performance

Hypothesis 3b: Unpredictability of the tactical competitive repertoire has no effect on relative market performance

Complementarities vis-à-vis competitors

The competitive repertoire should be also configured on the basis of how it compensates and/or leverages competitors' market activities. Note that competitors' activities not only undermine (Holak and Tang 1990) but also leverage the focal firm's market activities (Libai et al. 2009). The competitive repertoire can, hence, build on established consumer preferences and/or demand stimulated by others (Nguyen and Shi 2006). Competitive dynamics researchers have used the concept of competitive nonconformity (Miller and Chen 1996b; Deephouse 1999; Ferrier et al. 1999; Norman et al. 2007) to investigate this issue. The nonconformity of repertoires will have a negative effect on market performance if the rivals' activities complement those of the focal firm. Institutional theory predicts that this will be the case (DiMaggio and Powell 1983) while Porter's (1980) view of strategy as being different predicts the opposite. Previous research suggests that the returns to nonconformity depend critically on the regulatory environment (Delmas et al. 2007). As we test our hypothesis in a context which is drastically changing in terms of regulations we hypothesize the following:

Hypothesis 4b: Nonconformity of the strategic competitive repertoire has no effect on relative

market performance

Hypothesis 4b: Nonconformity of the tactical competitive repertoire has no effect on relative market performance

Complementarities between strategic and tactical repertoires

Thus far, the reader may have felt somewhat disappointed in reading our hypothesis because they all predict that the configurational characteristics of the competitive repertoire have no impact on relative market performance over time. In other words, we have predicted to *not* find any sustainable complementarities related to the strategic and tactical dimensions of the competitive repertoire. However, we have good reason to expect this given the fact that we consider a very long time period within a dynamic socio-economic environment and, logically, a changing competitive setting (Delmas et al., 2007; Soberman & Gatignon, 2005). Furthermore, this does not mean that it is meaningless to assess the configurational characteristics of the strategic (format strategy) and tactical (advertising tactics) repertoires. The configurational characteristics provide a way to assess complementarity *between* the format strategy decisions and advertising. The notion that strategic and tactical activities should be considered interdependent goes back to the classic texts on organization theory and strategic management. Consistency in the volume, simplicity and nonconformity are related to Porter's (1996) notion of internal fit, that is, whether the firm consistently pursues a particular competitive strategy. Milgrom and Roberts' (1990, 1995) work also stresses the combinative effects of different organizational structures and processes. A similar idea is conveyed by the term interfunctional coordination in the market orientation concept (Narver and Slater 1990). Finally, Siggelkow's (2001) idea of change in the presence of fit stresses the importance and difficulty of making comprehensive changes to the firm's system activities when adapting to changing environments.

Hypothesis 5: Consistency in the volume of the competitive repertoire has a positive effect on

relative market performance

Hypothesis 6: Consistency in the simplicity of the competitive repertoire has a positive effect on relative market performance

Hypothesis 7: Consistency in the unpredictability of the competitive repertoire has a positive effect on relative market performance

Hypothesis 8: Consistency in the nonconformity of the competitive repertoire has a positive effect on relative market performance

In other words, we predict that the strategic and tactical repertoires are complementarity. More specifically, we see that the firm's choices regarding how to configure and exploit complementarities within the individual repertoires (volume, simplicity, unpredictability and nonconformity) are complementary.

METHODS

Empirical context

The present empirical market setting of the grocery retailing market of the Northern European country is particularly interesting for several reasons. To begin with, the four major firms competing in the market underwent major changes in relative market performance during the period: two firms clearly increasing their market share and two firms tumbled down. The market leader also changed during the period. The changes in the market shares of the firms are shown in Figure 2. Moreover, the two losers (Firm 2 and Firm 4) in terms of market share actually exited the market by 1996 while the winners in the market exist today (2010). Firm 2 merged with Firm 1 and Firm 4 was taken into the control of banks due to financial problems.

- INSERT FIGURE 2 HERE -

The time period is characterized by substantial changes in the configuration of the market activities by which the firms compete. The structure of the market transformed from a state in which a large number of small retail outlet served the consumers nearby to state in which the retailers' store portfolio consist of a diverse collection of small to large retail outlets. Throughout the period, large numbers of small retail outlets were being closed in the rural area. At the same time, supermarkets and hypermarkets, with larger store floor area, were being opened in and around more densely populated areas. This trend was a response to the urbanization of the country's population and it was further enabled by the increasing wealth of the average consumer well as by technological developments such as new information technology. The larger average store floor area made it possible to serve increasingly larger numbers of consumers with fewer retail outlets. This is reflected in the decrease of the total number of retail outlets in operation, as shown in Figure 3. The market is characterized by increasing deregulation throughout the period.

- INSERT FIGURE 3 HERE -

The peaks in the graph are due to the fact that until the 1970s, the number of retail outlets increases due to demand growth and the fact that the consumers were being served through small rural area outlets. The peak year is different across firms. During the rest of the period, the aforementioned structural changes in the market take an effect, and are reflected in the declining numbers retail outlets. Taken together, all the firms responded to environmental changes with what on the surface seem like similar changes in their strategic repertoires. At the same time, the firms' performance varied and changed substantially, eventually leading to the death of the two unsuccessful retail organizations. A particularly interesting characteristic is the fact that the performance differences (as measured by market share growth and erosion) are highly consistent over time, raising the question if there are some lock-in effects prohibiting turnaround.

Data

Our data includes information about the market activities, market share, financial resources and performance of the four largest firms of the national-level market. Following earlier competitive dynamics researchers, we use market share and market share change as indicators of the market dominance and market performance (Ferrier et al. 1999). The market share data is based on AC Nielsen's archival data from 1971 through 2004. The data prior to 1971 is based on sales volumes as reported in the annual reports of the firms.

Following our hypotheses, we study the market activities of the four retail firms by focusing on the firms' competitive repertoires with respect to format strategy and advertisement tactics. According to industry sources and interviews with industry informants, the store format (and, logically, location) decisions and advertising were by far the most relevant weapons in the retail chains' competitive repertoires. The centrality of these two activity types was also highlighted because all the firms in essence had similar product assortments and similar levels of pricing (the average correlations between the prices of the firms' products being over 90 percent). Our database of 20,338 advertisements is a sample from two major regional newspapers of the country. Throughout the period, advertisements in this kind of newspapers were a highly significant type of promotional activity for the focal firms in the industry, as approximately 70 percent of all promotional budgets of the firms were allocated to such regional newspaper advertising. The firms' advertisements in the two specific newspapers under study can, in turn, represent their advertisements in all the major newspapers of the country. This is because the two newspapers were among the six major regional newspapers published in the country and because the two source newspapers represented the two main types of newspapers in the country, respectively: the other one being a major metropolitan area newspaper and the other one a major rural area newspaper. The database contains approximately 10-12 percent of the total number of the firms'

advertisements in the focal newspapers throughout the period. Specifically, the sample includes all the advertisements within six one-week periods each year: 1st week of February; 1st week of September; 1st week of November; the week before Easter; the week before Mid-Summer; and the week before Christmas. The latter three weeks represent high sales peaks in grocery retailing in the country, while the former three are ‘ordinary’ weeks. In effect, we gathered these data by going through all of the daily issues published in the newspapers during the six one-week periods, for each year between 1955 and 2004. Each advertisement was coded according to the following scheme: whether the advertisement was (1) small ($< 1,000$ column millimeters); (2) medium-sized (1,000 column mm – 2,000 column mm) or (3) large (≥ 2000 column mm). These data represent the advertising tactics, that is, the tactical repertoire of the firm.

A database of the numbers of three different types of retail outlets, in turn, describes the retail outlet repertoire of each firm each year. The outlet types are: (1) large outlet (outlet surface area $> 2,500 \text{ m}^2$ [over 26,910 sq. ft.]), (2) medium-sized outlet (400–2,500 m^2 [306–26,910 sq.ft.]), and (3) small outlet ($< 400 \text{ m}^2$ [less than 4,306 sq. ft.]). Thus, in each year, a three-dimensional vector describes the format strategy, that is, the strategic repertoire of the firm. These data were obtained from AC Nielsen archives and company histories and archives.

Outcome and explanatory variables

Relative market performance (outcome). We use market share gain as an indicator of relative market performance. We define market share gain (erosion) using the following formula

$$RMP_{t+1} = \ln\left(\frac{MS_{t+1}}{MS_t}\right) = \ln(MS_{t+1}) - \ln(MS_t).$$

The market share, MS_t , is defined as the fraction of the total

sales volume (of the four largest operating firms) attributable to the focal firm in year t . Relative market

RMP_{t+1} reflects market share growth (erosion) of the focal firm, that is, the performance indicator

increases with market share gains and decreases with market share erosion. This measure is similar to that used by Ferrier et al. (1999) and several other competitive dynamics researchers (Ferrier 2001; Usero and Fernández 2009).

(Consistency in) repertoire volume. To measure the volumes of the competitive repertoires, we compute the total sum of all distinct market activities of the focal type. Thus, the strategic repertoire volume is the number of the firm's retail outlets in operation in the focal year. The volume of the tactical competitive repertoire is the number of advertisements published by the firm in the focal year. Consistency in repertoire volume is measured by the product term between the volumes of the strategic and tactical repertoires. Thus, we measure the degree of consistency by using the fit-as-moderation concept, meaning that the product term of the chosen repertoire attributes of two repertoires represents the degree of fit (Venkatraman 1989).

(Consistency in) repertoire simplicity. Following earlier competitive dynamics research (Ferrier 2001), we use the Herfindahl concentration index to measure the simplicity attribute of the competitive repertoire. The interpretation of the measure is that as when the firm focuses on a few types of market activities, the Herfindahl index increases. When the firm employs a wider array of activities the index decreases. Elsewhere, the Herfindahl concentration index is often used to measure industry concentration (Hou and Robinson 2006). Other studies have used the Herfindahl index to measure innovation focus (Roberts & Amit, 2003), and top management team heterogeneity (Ferrier & Lyon, 2004). With regard to the simplicity of the strategic repertoire (i.e. format strategy), we use the

following formula $S_i = \sum_{j=1}^3 \left(\frac{y_{ij}}{\sum_{j=1}^3 y_{ij}} \right)^2$, where S_i is the index describing the simplicity, or concentration,

of the strategic repertoire of firm i . The numbers of different types of stores, that is, the format strategy

is used as a measure for the strategic repertoire of the firm. Thus, y_{ij} denotes firm i 's number of stores

of the j^{th} size category. Regarding the advertising tactics $A_i = \sum_{j=1}^3 \left(\frac{x_{ij}}{\sum_{j=1}^3 x_{ij}} \right)^2$ where A_i is the index

describing the simplicity, or concentration, of the tactical (advertising) repertoire of firm i . Variable x_{ij} denotes the number of advertisements by firm i of the j^{th} advertisement type. Consistency in repertoire simplicity is measured by the product term between the advertisement repertoires simplicity and retail outlet simplicity, that is, $A_i * S_i$.

(Consistency in) repertoire unpredictability. To measure the unpredictability of the competitive repertoires, we measure the magnitude of year-to-year change in the composition of the repertoires.

More specifically, this is measured using the following formulas $U_i^S = \sum_{j=1}^3 \left(\frac{y_{ij}^t - y_{ij}^{t-1}}{y_{ij}^{t-1}} \right)^2$ and

$U_i^A = \sum_{j=1}^3 \left(\frac{x_{ij}^t - x_{ij}^{t-1}}{x_{ij}^{t-1}} \right)^2$, where U_i^S and U_i^A refer to the unpredictability of the strategic and tactical

repertoires of firm i . Variables x_{ij}^t and y_{ij}^t denote the numbers of j th advertisement type and store type employed by the focal firm, i , in year t . As with repertoire simplicity and volume, consistency in unpredictability is measured by the product term between U_i^A and U_i^S .

(Consistency in) repertoire nonconformity. To measure the nonconformity of the competitive activity repertoires, we measure the degree to which the composition of the firm's repertoire deviates from the market averages (excluding the focal firm). If the firm uses a similar profile of market activities in its repertoires, the firm is said to conform to de facto market norms (Miller and Chen 1996a). The

measurement is defined as follows $N_i^S = \sum_{j=1}^3 \left(\frac{y_{ij}}{y_{ij}^{t-1}} - \frac{y_{-ij}}{y_{-ij}} \right)^2$ and $N_i^A = \sum_{j=1}^3 \left(\frac{x_{ij}}{x_{ij}^1} - \frac{x_{-ij}}{x_{-ij}} \right)^2$, where N_i^S

and N_i^A and refer to the nonconformity of the strategic and tactical repertoires of firm i . Variables x_{ij} and y_{ij} denote the numbers of j th advertisement type and store type employed by the focal firm, i . Variables x_{-ij} and y_{-ij} denote the numbers of j th advertisement type and store type employed by the rivals, on average. As with repertoire simplicity and volume, unpredictability consistency in nonconformity is measured by the product term between N_i^A and N_i^S .

Control variables

Absorbed slack. It is possible that the differences in the relative market performance actually reflect comparative advantage due to resource heterogeneity (Hunt & Morgan, 1995). Moreover, slack has been argued to imply a better ability to compete actively in the market (Ferrier, 2001). To account for this, we use absorbed slack as a control variable, measured by the equity to debt ratio of the firms. These data are obtained from the firms' annual reports.

Market dominance. Market position may affect the issue of what action repertoires a firm employs as part of the strategy of the firm (Grimm et al., 2005). Many competitive dynamics studies focusing on market share changes include market share as an indicator of market dominance (e.g., Ferrier et al., 1999). Market dominance is defined as the natural logarithm of the fraction of the total sales volume (of the four largest firms) attributable to the focal firm.

Firm-specific unobservable factors. It is possible that firm-specific unobservable factors affect performance and, thus, bias the estimates (Boulding, 1990). To counter this we add fixed firm-specific dummies for all but one firm. This controls for any firm-specific time-invariant unobserved effects. We also modeled the unobservable firm-specific factors using the random effects approach (Wansbeek &

Kapteyn, 1989). The main results obtained in this way corroborated those obtained with the fixed-effects approach and are thus suppressed.

Past performance. We could also incorporate a lagged dependent variable (past performance) as an additional control variable. However, including past performance in the models did not improve their explanatory power. The respective regression coefficients were also found to be insignificant. This is true also when market dominance is removed from the model. In each case, the main findings of the analyses do not change. Hence, we exclude past performance from the model as redundant.

Analyses

We use hierarchical regression analysis to test our hypotheses. Our data has a panel structure (Diggle et al., 2002). This, along with the model specification, introduces a number of analytical challenges. First, our measure of market performance is algebraically dependent on the market share of the firm in the current year. This introduces the problem of simultaneity because market dominance is defined in terms of the firms' market share in the current year. To counter the problem, we measure relative market performance at $t + 2$ (Nair-Reichert & Weinhold, 2001). Second, the configurational characteristics of the competitive repertoires are also algebraically connected. Furthermore, it is also possible that they are affected by market dominance, absorbed slack, or by other firm-specific factors. When there is a chance that the explanatory variables depend on each other, it is advisable to compare ordinary least squares (OLS) estimates to parameters obtained using the two-stage least squares (TSLS) procedure (Echambadi et al., 2006). Our implementation of the TSLS procedure involved using lagged explanatory variables as instruments for the suspect variables (all repertoire characteristics plus market dominance and absorbed slack). We assume that the firm-specific dummies are exogenous. The models were estimated using SAS software. We used the PROC REG to for OLS estimation and PROC SYSLIN for the TSLS estimation procedure. To warrant that that the final model specifications produce

reliable estimates, we investigate residual autocorrelation and heteroskedasticity for each of the model. We used Durbin-Watson for fixed-effects models test to check for autocorrelation of residuals, or serial correlation (Bhargava et al. 1982). The Durbin-Watson statistics obtained suggested no severe serial correlation in any of the models. We investigated heteroskedasticity by using a scatter plot showing the residuals of the regression analysis against the predicted values of market performance. We detected no problems related to heteroskedasticity or autocorrelation.

RESULTS

Table 1 shows the descriptive statistics and Pearson correlation coefficients of all the variables. The results of the hierarchical regression analysis are shown in Table 2 (Model 1-9) and Table 3 (Model 10-11). Overall, the pattern of results supports our hypotheses about the non-significant effects of the configurational characteristics of the strategic and tactical repertoires in themselves (hypotheses 1-4). Moreover, and perhaps more importantly, the results show that there are significant complementarities between the strategic (format strategy) and tactical (advertising) repertoires (hypotheses 5-8). The results also show that all the control variables are non-redundant. After discussing the baseline model (Model 1) that includes only the control variables, we only discuss only hypotheses 5-8.

- INSERT TABLE 1 HERE -

- INSERT TABLE 2 HERE –

- INSERT TABLE 3 HERE -

Model 1 (Table 2) includes only the control variables. The model is significant ($F = 7.52, p < .001$) and explains 18 percent of the total variation in the relative market performance. Absorbed slack has a positive and significant effect on performance ($\beta = .15; p < .10$), in accordance with numerous studies that have found that slack is beneficial for performance (e.g. Bourgeois, 1981). Market dominance, in turn, has a negative and significant effect on performance ($\beta = -0.38; p < .01$). Thus,

larger market shares are more likely to erode than smaller ones (cf., Ferrier, 2001). Partial F test confirmed the need to include fixed-effects in the model to control for unobserved heterogeneity ($F = 8.46, p < 0.001$).

Models 2-3 investigate hypothesis 5, which predicted that consistency in the volume of the competitive repertoire has a positive effect on performance. Model 3 shows that consistency in repertoire volume clearly improves performance ($\beta = .21; p < .05$). Moreover, the explanatory is clearly better than Model 2 that includes only the main effects ($\Delta R^2 = .03$) of repertoire volume. Models 4-5 show a similar pattern of results for repertoire simplicity. Recall that hypothesis 6 predicted that consistency in the simplicity of strategic and tactical repertoires has a positive effect on performance. Model 5 shows that consistency in competitive repertoire simplicity has a positive and significant effect on performance ($\beta = .23; p < .01$). An improvement in the explanatory power is observed when compared with Model 4 ($\Delta R^2 = .04$).

Hypothesis 7 predicted that consistency in the unpredictability of the competitive repertoire has a positive effect on performance. Models 6-7 investigate this effect. These models show that consistency in unpredictability is unrelated to performance as is the case with the main effects of unpredictability. Hence hypothesis 7 is not supported. Models 8-9 investigate hypothesis 8 which predicted that consistency in the nonconformity between strategic and tactical repertoires has a positive effect on performance. Hypothesis 8 is also supported because consistency in the nonconformity has a significant positive effect on performance ($\beta = .45; p < .01$). Including this interaction effect also improves the explanatory power of the model that includes only the main effects relating to nonconformity (Model 8) ($\Delta R^2 = .04$).

Because consistency in the repertoire volume, simplicity and nonconformity are all significant, in Model 5, Model 7, and Model 9, respectively, it is possible that the results of any of the models are due

to variable omission bias (Wooldridge 2002). Models 10-11 reported in Table 3 check if this is the case. Model 10 includes all controls and all configurational characteristics relating to repertoire simplicity and nonconformity as well as both related interaction effects. In this model, consistency in the nonconformity of the repertoires is no longer significant, though it is still positive ($\beta = .27$; $p = .16$). Consistency in repertoire simplicity remains positive and significant ($\beta = .24$; $p < .01$). Model 11 includes all variables except those relating to nonconformity and unpredictability which were found to be unrelated to relative market performance in the previous stages. Even in this model, both interaction effects are positive and significant. The standardized regression coefficients are $.35$ ($p < .01$) for consistency with regard to repertoire volume and $.26$ ($p < .001$) for consistency with regard to repertoire simplicity. Moreover, the explanatory power of the model is clearly better than that of Model 7 ($\Delta R^2 = .04$). This shows that the two interaction effects that measure consistency capture ways aspects in which the strategic and tactical repertoires are complementary, underlining the multidimensionality and robustness of the complementary relationship. Finally, to check whether the suspect endogeneity (see previous section) is responsible for the results, we employed a two-stage least squares approach to estimate the full model. We estimated Model 11 using the TSLS procedure. In this model, the effect of consistency with regard to simplicity is positive and significant ($\beta = .39$; $p < .05$). The effect of consistency in repertoire volume is also positive but it is no longer significant ($\beta = .06$; $p = .37$). Hence, the support for the positive effect of consistency in competitive repertoire simplicity is strengthened (hypothesis 5) whereas the positive consistency in repertoire volume is not as clear (hypothesis 6).

To summarize, the positive and significant interactions terms in the eleven models reported suggest that the choices regarding how to configure (volume, simplicity, nonconformity) the strategic and tactical market activities are complementary. As a result, consistency between the strategic and tactical

repertoire has a positive effect on market performance. Specifically, a high degree of tactical repertoire simplicity *combined with* a high degree of strategic repertoire simplicity *together* has a positive effect on market performance. Similarly, a low degree of simplicity (i.e. high complexity) in the strategic repertoire combined with a low degree of simplicity (i.e. high degree of complexity) in tactical repertoire should influence market performance positively. Moreover, the same pattern appears to apply to repertoire volume as well. In other words, coupling a high-volume (or low-volume) advertising with a large (or small) number of retail outlets contributes positively to performance. This result is also illustrated in Figure 4 that charts the complementary effects of the strategic and tactical repertoires on performance, as reported in Model 11 (Table 3). The “low” and “high” denote plus minus one standard deviation from the sample mean, respectively.

- INSERT FIGURE 4 HERE -

CONCLUSIONS

Main findings and contributions

The contributions of the paper range from conceptual to empirical. Firstly, this paper developed a new perspective on how firms use repertoires of competitive activities to gain and sustain competitive advantage. Earlier research has focused on how competitive actions and repertoires influence rivals behaviors (Chen et al., 1992), firm reputation (Basdeo et al., 2006), investor valuations (Rindova et al., 2010), and market share gains and erosion (Ferrier et al., 1999), while others have studied how competitive actions reflect and leverage organizational structures (Smith et al., 1991), top management team composition (Ferrier & Lyon, 2004), organizational resources (Ndofor et al, 2011) and firm-level competitive aggressiveness (Ferrier, 2001). Extending these perspectives, we focused on the complementarities within the competitive repertoire, that is, on how the competitive activities in combination influence a firm’s market performance. We conceptualized the competitive repertoire as

reflecting a system of complementary choices regarding how to create, deliver and communicate superior value customers relative to competitors (Porter 1996; Roberts and Amit 2003; Varadarajan 2010). Within the competitive repertoire, we focused on complementarities among the strategic and tactical market activities considered separately and between the two types of market activities.

Secondly, we drew on research on competitive repertoires (e.g. Miller and Chen 1994; Smith et al. 2001; Basdeo et al. 2006) to investigate how firms configure their strategic and tactical repertoires in grocery retailing. We studied the configurational characteristics of the competitive repertoires.

Collectively, the measures were used as a basis for identifying complementarities within the competitive repertoire that would consistently improve performance. We employed hierarchical regression for investigating several possible sources of complementarities. Over the time period studied, we did not find any sustainable performance effects for the configurational characteristics pertaining to the strategic or tactical repertoires considered separately. However, at a higher level of analysis, we found that the choices regarding how to configure the different repertoires were complementary. This was found to be a robust finding, manifesting in multiple positive interaction effects between the configurational characteristics of the strategic and tactical repertoires.

Thirdly, by adopting a novel approach to analyzing competitive repertoires, our study sheds new light on *how* competitive actions and activities influence firm performance. Namely, prior research has found that characteristics of competitive repertoires such as volume, simplicity, unpredictability and nonconformity have effects on performance (Smith et al. 2001; Basdeo et al., 2006; Rindova et al., 2010; Ndofor et al., 2011). Collectively, these results have been taken to mean that competitive aggressiveness increases performance (Smith et al., 2001). We were unable to confirm these performance implications. Two possible reasons for this can be identified. On the one hand, our empirical analysis considered a very long (i.e. fifty years) time period whereas prior studies have

focused on larger numbers of firms over a shorter time frame (i.e. one to fifteen years; see ,Smith et al., 2001). The repertoire characteristics may be moderated by various market-level factors that change over our study period. On the other hand, our definition of competitive repertoire was *not* based on deviant, newsworthy actions but was based on the most central market activities that the firms used throughout the period to compete. Moreover, the identification of the competitive repertoire was driven by the focal empirical context. Hence, the findings of prior competitive dynamics studies may be most pertinent to disruptive competitive activities while our study focused on lower-level, typical-to-industry type of competitive activities. At this lower level, it appears that complementarities within the competitive repertoire play a key role in determining firm performance. Taken together, it appears that firms should combine competitive aggressiveness with internally consistent use of competitive activities to increase performance.

Fourthly, the study advances our understanding of how strategic and tactical actions together influence firm performance. Prior competitive dynamics research has focused on the differences in the logic in which firms use strategic vs. tactical actions and how they influence performance differently (e.g., Smith et al., 1991; Chen et al., 1992; Miller & Chen, 1994; Miller & Chen, 1996a). By taking this distinction as a starting point, our study shows how strategic and tactical repertoires interact. Our empirical analysis shows that strategic and tactical actions should be considered complementary. Hence, understanding their interactions is essential in understanding how competitive repertoires influence firm performance. To our knowledge our study is the first to explicitly address this issue.

Moreover, the finding that decisions on the configuration of strategic and tactical repertoires are complementary relates to how firms adapt to and survive in changing environments. On the one hand, our results show that when adapting to environmental changes (e.g. changing consumer preferences) a firm can benefit if it can maintain internal consistency between the strategic and tactical repertoires (cf.

Siggelkow 2001). Hence, complementarities make adaptive organizational change more difficult to achieve as it requires making comprehensive changes throughout the firm's competitive repertoire (cf., Milgrom & Roberts, 1990). Our study shows that in addition to structural inertia (Hannan & Freeman, 1984) there are barriers to organizational change at the level of concrete marketplace activities that the firm uses to compete. The other side of the coin is that the complementarities within the competitive repertoire protects firms from imitation (Rivkin 2000) and makes benchmarking difficult (cf. Vorhies & Morgan, 2005). Taken together, our study relates also to the issue of competitive aggressiveness under performance distress (cf., Ferrier et al., 2002). Responding to performance problems by competing aggressively may not yield expected benefits because the firm may not have the capability to make the necessary complementary reconfigurations throughout its entire repertoire.

Fifthly, our study contributes to the study of complementarities. Generally speaking, our study reinforces the notion that complementarities among market activities are an important source of performance effects. Specifically, our extensive longitudinal analysis shows that complementarities may yield not only transient but also facilitate building sustainable competitive advantage (Porter, 1996). Longitudinal analyses of complementarities are necessary to extend the prevalent cross-sectional focus in the complementarity perspective. We extend the rather short list of studies, including Siggelkow (2001) and Rothaermel and Hill (2003) that have investigated the evolution and sustainability of complementarities over time (see, Ennen & Richter 2010).

Limitations and implications for future research

Regarding the generalizability of the empirical results, the fact that the present study was carried out within the grocery retailing industry in one country represents a limitation. Future research could attempt to corroborate the results in different industries, across industries, and within different environmental settings. Furthermore, the present study is limited by the fact that we only had access to

one measure of the competing firms' market performance. Especially, profitability could be used as an alternative performance measure in future research, given its importance to firm viability. Other marketing and non-marketing activities could also have been included as controls. We were unable to do so due to data availability problems. However, according to our industry informants, our chosen repertoires were the most important instruments of competition during the focal period.

Finally, it should be noted that while we found significant interaction effects between retail format and advertising decisions, the specific result may be context-sensitive (cf. Porter & Siggelkow, 2008). Specifically, we have studied an oligopolistic competitive context where advertisement volumes, representing barriers to entry, tend to be high (Porter, 1974). Furthermore, the use of coupons is often a more common promotional activity in other retailing contexts (Kumar & Swaminathan, 2005). Hence, future research could apply our research approach in different markets where the competitive repertoires look different. In the retailing domain, it would be interesting to study complementarities between store format decisions and coupon activities (cf., Slotegraaf et al., 2003). Nevertheless, we do believe that there is valuable generality in our research framework that may well apply to other situations. The study provides an integrative analytical scheme with which to identify and assess complementarities within and across different dimensions of the firm's competitive repertoires. We see that the concept of competitive repertoires provides a way for future studies to further chart complementarities among competitive actions that in combination influence firm performance.

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FIGURE 1

Research framework

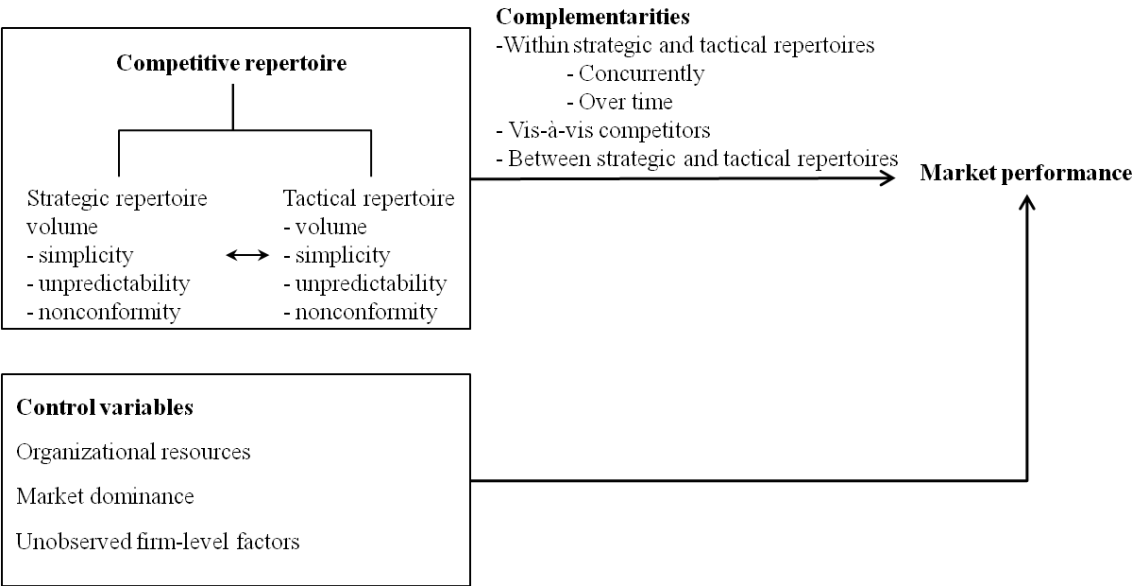


FIGURE 2

Market share development of the four major firms in the focal market

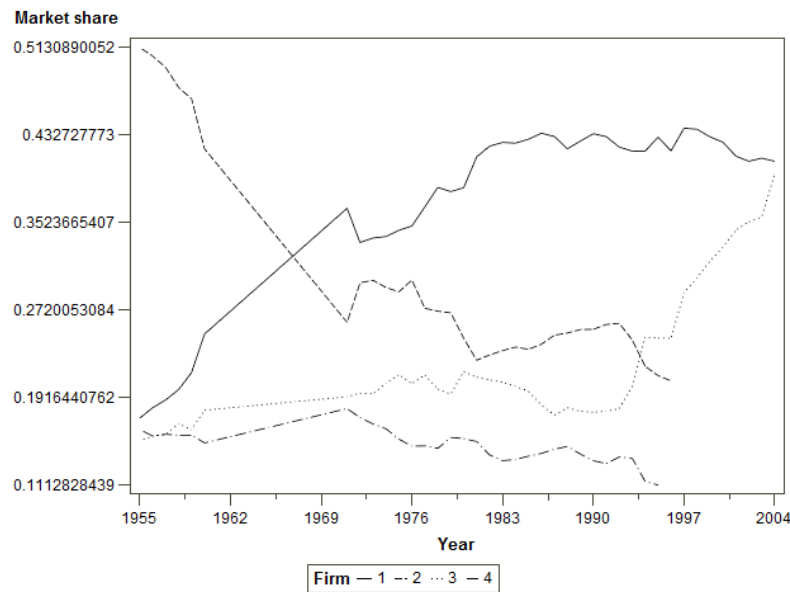


FIGURE 3

The development of the number of retail outlets of the major firms

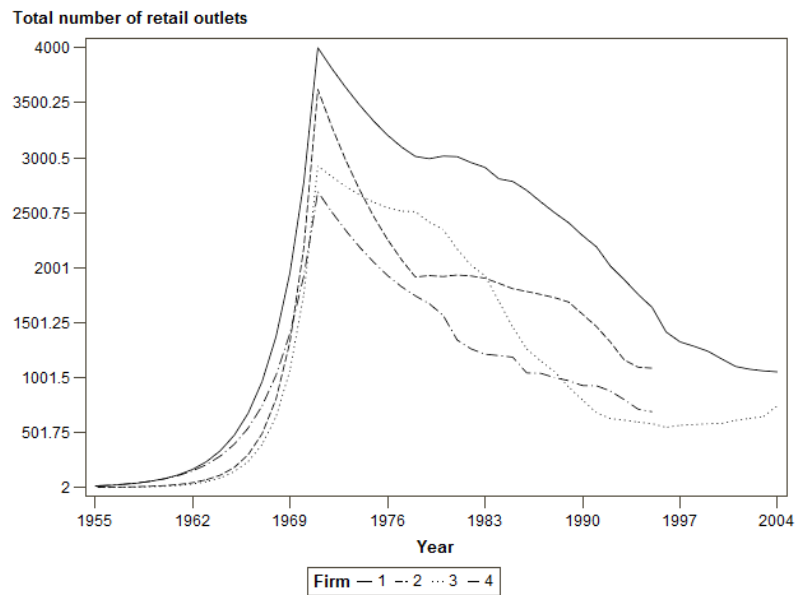


FIGURE 4

The complementarity of strategic and tactical repertoires

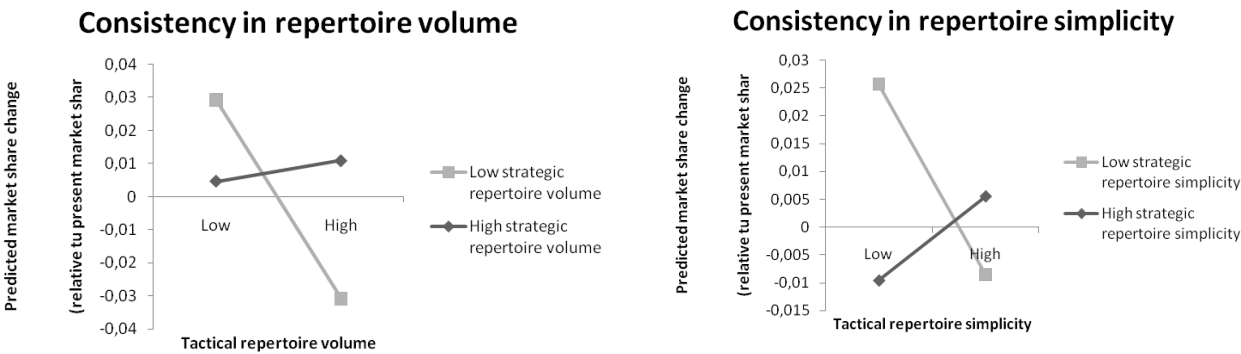


TABLE 1
Descriptive statistics and Pearson correlation coefficients between the model variables^a

Variable	#	Mean	Std Dev	Pearson correlation coefficients													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
Relative market performance	1	0.00	0.05														
Absorbed slack	2	0.32	0.32	0.19 *													
Market dominance	3	-1.42	0.39	-0.07	0.37 **												
Strategic repertoire volume ^a	4	1326	1042	-0.09	-0.26 **	0.26 **											
Tactical repertoire volume ^a	5	111.75	88.32	-0.07	-0.2 **	0.28 **	0.73 **										
Strategic repertoire volume x Tactical repertoire volume	6	214845	255994	-0.03	-0.24 **	0.35 **	0.83 **	0.93 **									
Strategic repertoire simplicity ^a	7	0.77	0.17	-0.06	-0.54 **	-0.28 **	0.26 **	-0.05	0.15 *								
Tactical repertoire simplicity ^a	8	0.58	0.18	0.08	-0.12	-0.06	-0.2 **	-0.3 **	-0.09	0.36 **							
Strategic repertoire simplicity x Tactical repertoire simplicity	9	0.46	0.20	0.08	-0.3 **	-0.19 *	-0.01	-0.24 **	0	0.74 **	0.87 **						
Strategic repertoire unpredictability	10	0.39	0.31	0.01	-0.11	-0.14 +	-0.22 **	-0.49 **	-0.31 **	0.42 **	0.47 **	0.51 **					
Tactical repertoire unpredictability	11	1.07	1.20	0.03	-0.09	-0.02	-0.02	-0.21 **	-0.09	0.28 **	0.09	0.18 *	0.39 **				
Strategic repertoire unpredictability x Tactical repertoire unpredictability	12	0.56	1.07	0.02	-0.05	-0.05	-0.04	-0.27 **	-0.15 *	0.29 **	0.16 *	0.23 **	0.6 **	0.9 **			
Strategic repertoire nonconformity	13	0.15	0.09	0.05	0.17 *	-0.02	0.01	-0.03	-0.06	-0.23 **	-0.22 **	-0.22 **	-0.24 **	-0.07	-	0.07	
Tactical repertoire nonconformity	14	0.10	0.14	0.08	0.38 **	0.12	-0.51 **	-0.32 **	-0.37 **	-0.61 **	0.12 +	-0.25 **	0	-0.06	-	0.05	-0.05
Strategic repertoire nonconformity x Tactical repertoire nonconformity	15	0.01	0.02	0.2 **	0.48 **	0.06	-0.38 **	-0.22 **	-0.31 **	-0.62 **	-0.17 *	-0.4 **	-0.16 *	-0.11	-0.1	0.31 **	0.8 **

^a Variable is standardized prior to analysis

[†] p < .10; * p < .05; ** p < .01; *** p < .001

TABLE 2
Results of the hierarchical regression analyses^a

	Model								
Variables	1	2	3	4	5	6	7	8	9
<i>Intercept</i>	0.00 (-3.09) **	0.00 (-3.09) **	0.00 (-4.05) ***	0.00 (-2.77) **	0.00 (-2.40) *	0.00 (-3.09) **	0.00 (-3.16) **	0.00 (-3.37) ***	0.00 (-3.06) **
<i>Control variables</i>									
Absorbed slack	0.15 (2.01) †	0.11 (1.14)	0.17 (1.72) †	0.15 (1.52)	0.06 (0.57)	0.15 (1.74) †	0.16 (1.81) †	0.08 (0.87)	0.01 (0.08)
Market dominance	-0.38 (-2.86) **	-0.35 (-2.50) *	-0.41 (-2.91) **	-0.35 (-2.48) **	-0.29 (-2.07) *	-0.39 (-2.83) **	-0.38 (-2.80) **	-0.43 (-3.13) **	-0.43 (-3.24) **
Firm 1 fixed effect	0.53 (3.59) ***	0.53 (3.59) ***	0.49 (3.30) **	0.50 (3.17) ***	0.43 (2.80) **	0.53 (3.56) ***	0.53 (3.59) ***	0.61 (3.92) ***	0.65 (4.23) ***
Firm 2 fixed effect	0.17 (1.28)	0.13 (2.84)	0.15 (1.08)	0.14 (1.04)	0.14 (1.09)	0.17 (1.28)	0.17 (1.23)	0.18 (1.34)	0.17 (1.31)
Firm 3 fixed effect	0.38 (3.85) ***	0.38 (3.82) ***	0.38 (3.87) ***	0.37 (3.63) ***	0.35 (3.53) ***	0.38 (3.79) ***	0.38 (3.77) ***	0.38 (3.79) ***	0.45 (3.02) **
<i>Repertoire volume</i>									
Advertising tactics (tactical)		-0.12 (-1.11)	-0.03 (-0.26)						
Format strategy (strategic)		0.09 (0.83)	-0.05 (-0.42)						
<i>Repertoire simplicity</i>									
Advertising tactics (tactical)				-0.12 (-1.11)	0.08 (1.11)				
Format strategy (strategic)				0.09 (0.83)	-0.02 (-0.22)				
<i>Repertoire unpredictability</i>									
Advertising tactics (tactical)						0.02 (0.28)	0.03 (0.36)		
Format strategy (strategic)						-0.01 (-0.18)	0.15 (0.84)		
<i>Repertoire nonconformity</i>									
Advertising tactics (tactical)								0.03 (0.44)	-0.12 (-1.39)
Format strategy (strategic)								0.14 (1.56)	-0.18 (-1.32)
<i>Repertoire consistency</i>									
Consistency in repertoire volume (=Tactical repertoire volume × Strategic repertoire volume)			0.21 (2.36) *						
Consistency in repertoire simplicity (= Tactical repertoire simplicity × Strategic repertoire simplicity)					0.23 (3.01) **				
Consistency in repertoire unpredictability (=Tactical repertoire unpredictability × Strategic repertoire unpredictability)							-0.16 (-0.80)		
Consistency in repertoire consistency (=Tactical repertoire nonconformity × Strategic repertoire nonconformity)									0.45 (3.02) **
R^2	0.18	0.18	0.21	0.18	0.22	0.18	0.18	0.19	0.23
ΔR^2 (partial F) ^d		0.00	0.03 (5.56) *	0.00	0.04 (9.06) **	0.00	0.00	0.01 (1.26)	0.04 (9.14) **
F^c	7.52 ***	2.69 *	5.66 ***	5.42 ***	5.42 ***	5.33 ***	4.73 ***	5.75 ***	6.41 ***

† p < .10; * p < .05; ** p < .01; *** p < .001 (two-sided t tests are used to test the significance of the parameters)

^a Standardized regression coefficients are reported (t values in parentheses). The dependent variable is relative market performance at t+2. Ordinary least squares are used.

^c F test is used to test the significance of the full model.

^d Partial F test checks if the explanatory power increases significantly when adding new variables (new variables are bolded) when compared to the reduced model.

TABLE 3
Results of the hierarchical regression analyses (continued) ^a

Variables	Model	
	10	11
<i>Intercept</i>	0.00 (-2.59) **	0.00 (-3.19) **
<i>Control variables</i>		
Absorbed slack	-0.03 (-0.35)	0.04 (0.69)
Market dominance	-0.36 (-2.54) *	-0.47 (-2.81) **
Firm 1 fixed effect	0.59 (3.52) **	0.51 (3.20) **
Firm 2 fixed effect	0.18 (1.30)	0.25 (1.67) †
Firm 3 fixed effect	0.34 (3.24) **	0.36 (3.66) ***
<i>Repertoire volume</i>		
Advertising tactics (tactical)		-0.29 (-1.55)
Format strategy (strategic)		0.10 (0.64)
<i>Repertoire simplicity</i>		
Advertising tactics (tactical)	0.02 (0.15)	-0.10 (-0.98)
Format strategy (strategic)	0.12 (0.88)	-0.11 (-0.90)
<i>Repertoire unpredictability</i>		
Advertising tactics (tactical)		
Format strategy (strategic)		
<i>Repertoire nonconformity</i>		
Advertising tactics (tactical)	-0.08 (-0.88)	
Format strategy (strategic)	0.06 (0.28)	
<i>Repertoire consistency</i>		
Consistency in repertoire volume (=Tactical repertoire volume × Strategic repertoire volume)		0.35 (2.81) **
Consistency in repertoire simplicity (= Tactical repertoire simplicity × Strategic repertoire simplicity)	0.24 (2.41) *	0.26 (3.38) ***
Consistency in repertoire unpredictability (=Tactical repertoire unpredictability × Strategic repertoire unpredictability)		
Consistency in repertoire consistency (=Tactical repertoire nonconformity × Strategic repertoire nonconformity)	0.27 (1.40)	
R^2	0.27	0.30
ΔR^2 (partial F) ^d	0.04 (3.45)*	0.04 (3.08)**
F^c	5.57 ***	5.44 ***

† p < .10; * p < .05; ** p < .01; *** p < .001 (two-sided t tests are used to test the significance of the parameters)

^a Standardized regression coefficients are reported (t values in parentheses). The dependent variable is relative market performance at $t+2$. Ordinary least squares are used.

^c F test is used to test the significance of the full model.

^d Partial F test checks if the explanatory power increases significantly when adding new variables (new variables are bolded) when compared to the reduced model.