Chapter 2

Competitive Reactions to Strategic and Tactical Marketing Actions

Abstract

A recurring question that managers face is how (if at all) to react to competitive actions. In contrast to earlier studies in this field that employ homogeneous definitions of competitive behavior, we distinguish between reactions to competing strategic and competing tactical actions. Using a unique, single-source dataset of personal selling interactions between firms and customers covering fourteen drug categories, we show that substantial differences in reactions exist. In particular, strategic actions elicit competitive responses with stronger short- and long-term consequences compared to tactical actions. Furthermore, while the decision to react to competing strategic actions is always warranted, this is not the case for a substantial amount of tactical actions, where firms retaliate with an ineffective marketing instrument. This divide between actions is further exacerbated in the drivers of the strength of the reactions that we observe: while higher managers in charge of taking strategic actions do so based on a broad set of behavioral factors, junior managers in charge of tactical actions use a narrower, motivationally focused set of factors. Based on these findings, we suggest directions to improve decision makers' reactions to competing strategic and tactical actions.

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Markets are shaped by the interplay of firms that engage in a seemingly endless series of moves and countermoves vying for a favorable position. Successful (or unsuccessful) moves directly affect the performance of firms involved (Chen 1996; Porter 1980). It should therefore come as no surprise that the marketing-response literature has a long tradition in analyzing the effects of competition on firms involved (see for example Leeflang et al. (2017, ch. 9); Leeflang and Wittink 1992, 1996, 2001; Nijs et al. 2001; Steenkamp et al. 2005). The insights of these analyses inform managerial decision making about the adequacy of actions taken. They do so by evaluating the short- and long-term outcomes, an important but also challenging task for managers (Montgomery, Moore and Urbany 2005). An aspect that was not addressed by these prior studies is that while all competitive moves carry some weight, some moves may carry more weight than others with respect to firm outcomes. The strategy literature characterizes this difference by distinguishing between strategic and tactical actions (Chen, Smith and Grimm 1992; Porter 1980; Smith et al. 1991; see also Table 2-1). Strategic actions, implemented by higher management, determine the policies and strategies that govern the acquisition, use and disposition of resources to achieve firm objectives (Anthony 1965; Schultz, Slevin, Pinto 1987; Steiner 1969). Once implemented, they have a strong influence on a firm's future path and are not easily reversed (Miller and Chen 1994; Smith et al. 1991). Tactical actions, which are implemented by more junior management, determine the detailed deployment of these resources (Anthony 1965; Schultz, Slevin, Pinto 1987; Steiner 1969). They often serve to fine tune strategy, have a lower resource cost, and are more easily reversed once implemented (Smith et al. 1991).

Assessing the impact and adequacy of actions taken at these different firm levels in the face of competition will be our goal in this chapter. Our study is related to two existing research streams: the marketing response literature, and the strategy literature. Prior work in the marketing-response literature (e.g. Leeflang and Wittink 1992, 1996, 2001; Nijs et al. 2001; Steenkamp et al. 2005) did neither take into account the differentiation between strategic and tactical actions, nor considered the potentially distinct effects on the strength of reactions and their short- and long term consequences (see Table 2-1). Earlier studies in the strategy literature do not discern short- from long-term consequences, and often do not consider reaction strength, but only number and timing of responses (e.g. Chen 1996; Chen, Smith and Grimm 1992; Miller and Chen 1994; Smith et al. 1991; see also Table 2-1). By illustrating that reaction strength is also an important determinant, we guide managerial decision making on *how* to react, and

address an open research topic (Smith et al. 1991). A third stream of research that relates to this chapter seeks to optimize firm decisions, taking into both the short- and long-term consequences of such decisions (e.g. Dong, Manchanda and Chintagunta 2009; Liu et al. 2016; Lodish et al. 1988; Montgomery, Silk and Zaragoza 1971; Montoya, Netzer and Jedidi 2010). While these studies mostly employ the same empirical setting (i.e. the pharmaceutical industry), we differ from this stream of research as we focus on the consequences of firm actions in the marketplace in the form of competitive response, regardless of the optimality of such decisions. Therefore, we are not concerned with optimizing either the strategic decision or tactical decisions of a firm.

Given this distinction between strategic and tactical actions, this chapter focusses on identifying the differences between the two action types in terms of effectiveness and firm performance in the face of competition. In particular, we make three distinct contributions: First, we show that firm reactions to competing strategic actions have stronger short- and long-run consequences than reactions to competing tactical actions. Thus, while both strategic and tactical actions have an impact on the short- *and* the long-run, these effects are stronger for strategic actions. Second, we show that retaliating (i.e. increasing marketing effort) is always warranted for strategic competitive actions, but that it is often unwarranted for tactical competitive actions. Third, we find that the reactions by junior managers deviate from those of higher managers. While the latter groups' decisions are based on a broad set of behavioral factors (i.e. driving characteristics of managers underlying whether a response follows or not), we show that the former group has a more limited behavioral focus. Potentially, this induces a more-short term orientation for these junior managers, leading to more limited attention to the competitive environment.

These findings derive from the analysis of a unique, single-source panel of British physicians. This representative sample reported detailing calls[1] received from pharmaceutical firms (marketing effort using the sales force) and prescriptions for drugs written (sales) covering the period 1987-2006. We analyze a subset of the data which focusses on 14 different chemical entities, with each one having more than one branded drug based on the *same* molecule on the market. Given that it is impossible to separate the effects of competitive actions from differences

[1] In the setting of the pharmaceutical industry, visits by representatives of a pharmaceutical firm to a physician are known as details or detailing calls. Detailing is the main marketing instrument in the pharmaceutical industry (e.g. Dong, Manchanda and Chintagunta 2009; *GfK* 2016), and is more effective than other instruments used in the industry (Kremer et al. 2008).

in drug efficacy, by controlling for drug efficacy we are able to study competitive interaction in isolation in this setting. Using a novel seemingly unrelated error-correction model (SURECM), we quantify firms' reaction strength and associated sales impact, and investigate the impact of a theoretically derived set of moderators on reaction strength. To differentiate between strategic and tactical attacks, we perform these analyses at two firm levels: the brand level (strategic) and the brand-regional level (tactical).

Table 2-1: Overview of Studies about Competition

Study	Distinction strategic vs. tactical actions	Strength of reactions	Distinction short- vs. long-term effects
Chen (1996)	-	✓	-
Chen, Smith and Grimm (1992)	✓	✓	-
Dong, Manchanda and Chintagunta (2009)	-	-	✓
Leeflang and Wittink (1992)	-	-	✓
Leeflang and Wittink (1996)	-	✓	-
Leeflang and Wittink (2001)	-	✓	-
Liu et al. (2016)	-	-	✓
Lodish et al. (1988)	-	-	✓
Miller and Chen (1994)	✓	-	-
Montoya, Netzer and Jedidi (2010)	-	-	✓
Montgomery, Silk and Zaragoza (1971)	-	-	✓
Nijs et al. (2001)	-	✓	✓
Smith et al. (1991)	✓	-	-
Steenkamp et al. (2005)	-	✓	✓
This study	✓	✓	✓

The remainder of this chapter is organized as follows. In the next section, we present our research framework in more detail and provide expectations for the strength of reactions for both action types. Furthermore, we use prior research to derive a set of moderating variables

potentially influencing reaction strength. Next, we present our data set in more detail, and explain the analytical methods used. Subsequently, we outline our findings. Firstly, we provide empirical evidence for the presence of strategic and tactical reactions. Second we report the results on the strength of reactions for both action types. Thirdly, we relate the reaction elasticities to the sales elasticities to assess whether reactions were justified. Finally, we evaluate the impact of moderating variables on reaction strength. We continue with highlighting our findings and give implications for managers. In the last section of this chapter we discuss the limitations of this study and provide directions for future research.

2.1 Research background

We investigate the occurrence of reactions of a defending brand to a strategic or tactical attack initiated by an attacking brand (see Figure 2-1). In addition to the occurrence of a reaction to an attack, we also consider factors that moderate the strength of the reaction if it occurs. First, we discuss our expectations for the strength of reactions on attacks. Next, we provide a rationale and expectations for the chosen moderating factors influencing variation in the strength of these reactions based on prior research in this area.

2.1.1 Short- and long-term reactions to strategic and tactical actions

Prior research distinguishes strategic from tactical actions mainly based on the number and the timing of reactions that occur (Chen, Smith and Grimm 1992). As reactions to tactical actions are more easily implemented than reactions to strategic actions, their frequency is higher and their implementation is faster (e.g. Ferrier 2001; Smith et al. 1991). However, these measures do not take the effectiveness of such reactions into account. This is important because it allows for an evaluation to assess whether the action taken was justified. Furthermore, consequences of reactions could differ over the time period considered for evaluating the effects. We address both issues here by quantifying the strength of reactions to strategic and tactical actions using elasticities, allowing us to accurately evaluate their consequences by comparing their strengths, and by considering both short- and long-term effects, allowing us to differentiate between time horizons.

We expect that reactions to tactical actions have stronger short-term consequences, while reactions to strategic actions have stronger long-term consequences. As tactical actions seek to

fine tune existing strategy, their implementation is quick and requires low levels of resources (Chen, Smith and Grimm 1992; Miller and Chen 1994; Smith et al. 1991). Thus, their short-term effect should be strong due to their 'quick fix' nature. However, their long-term effect is expected to be limited compared to strategic actions. Such strategic actions take longer to implement, but have a greater impact on a firm's future path (Miller and Chen 1994). Therefore, we expect strategic decisions to have stronger long-term impact.

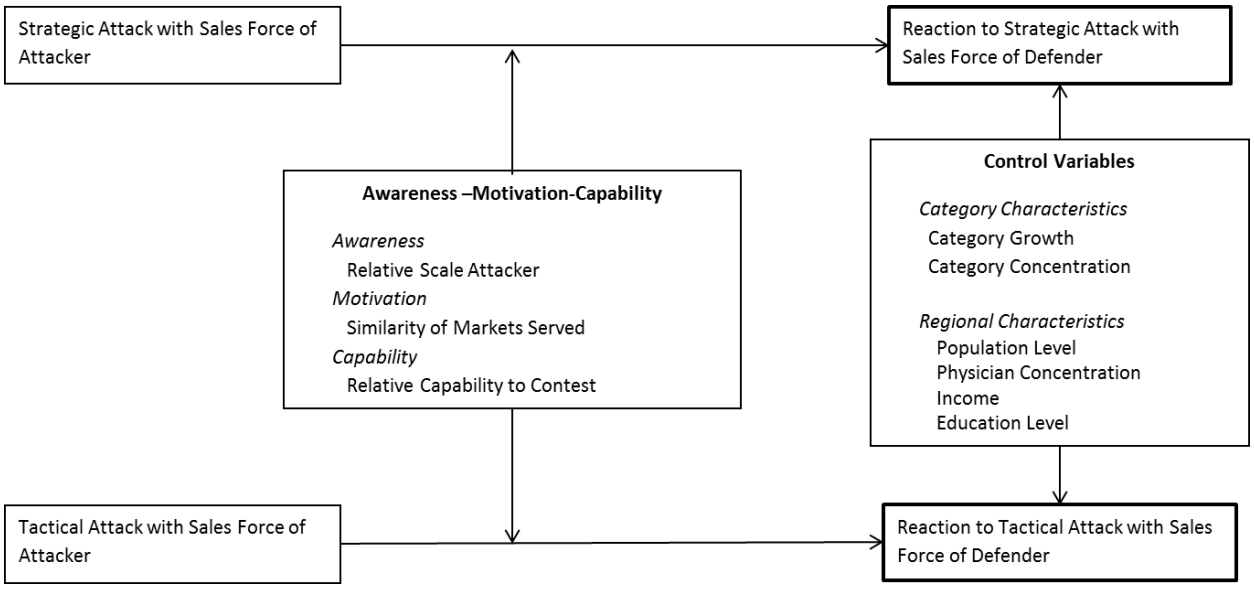
2.1.2 Factors moderating reaction strength

Next, we focus on factors that potentially moderate the strength of reactions. Figure 2-1 provides an overview of these moderators, and their relation to strategic and tactical actions taken by firms. The awareness-motivation-capability perspective applied in the strategy literature distinguishes three behavioral variables that influence the firm's decision to act on a competitive action: awareness, motivation and capability (Chen, 1996). According to Chen (1996) these characteristics are strongly related to the market in which firms are active (awareness and motivation) and the resources available to firms (capability). It is important to capture both the market circumstances (external environment) as well as resource availability (internal environment) in competitive relationships, as ignoring one or the other can bias findings (Slotegraaf, Moorman and Inman 2003). Steenkamp et al. (2005) also show that these three factors are antecedents of competitive actions. We therefore consider these three variables as sources from which competitive interaction derives. This way, we are able to characterize what drives competitive actions and provide more fine-grained insights in the strength of competitive relationships.

To operationalize each of these behavioral characteristics, we derive relevant factors from existing research, i.e. Chen and Miller (2012). In particular, we measure *awareness* as the relative scale in terms of sales of the attacking firm compared to the defending firm (e.g. Baum and Korn 1999; Chen, Su and Tsai 2007). The scale of a firm is an important determinant of a firm's position in a given market. Through its scale a firm can gain market power, which reflects its strength in a given category (Hambrick, MacMillan and Day 1982). Brands with significant market power often have higher budgets, which makes actions initiated by them more noticeable to competitors (Smith et al. 1991). Moreover, firms are more concerned with larger rivals than

with smaller ones (Baum and Korn 1999), and managers often focus on the size of a competitor first (Chen and Miller 1994). Taken together, we expect that attacks initiated by larger scale rivals lead to stronger reactions due to the increased awareness of such attacks compared to those of smaller scaled rivals. We have no a-priori reason to expect differences between strategic and tactical actions in this regard; hence we assume the effect of relative scale to be similar across both.

Figure 2-1: Guiding Framework



Motivation is measured by the similarity of competitors in terms of markets served. The market in which rivalrous firms meet has been shown to be an important determinant of the extent of their competitive actions. Most research shows that firms which compete in similar markets will be more motivated to react to each other in order to protect their position in the market (e.g. Chen 1996; Gielens et al. 2008; Kilduff, Elfenbein and Staw 2010; Leeflang and Wittink 2001). However, Smith et al. (1997) suggest that firms react to firms in both similar and dissimilar markets, and that competition does not necessarily restrict itself to similar markets. We therefore do not form expectations on the direction of this moderator, but leave it as an empirical question. We capture this variable by comparing the market segments served by the attacking and defending firm, and characterizing whether these are similar markets or not.

Finally, *capability* is measured in terms of the relative capability to contest a particular attack. In line with the findings of Chen, Su and Tsai (2007) we posit that the intensity of reactions depends on the relative capability to contest between brands. We capture this variable by the observed marketing deployment (i.e. marketing expenditures) over our data period. If the attacking brand has more resources than the defending brand, reactions are expected to be weakened due to lack of resources to do so (Gatignon and Reibstein 1997). Not only are weaker defenders likely to have smaller budgets available to retaliate, but such defenders could also be faced with the fear of strong retaliation if they do react, making reactions less likely (e.g. Kumar, Scheer and Steenkamp 1998). Conversely, in the case that the difference between the attacking and defending brand is small, the fear of strong counterreactions is lessened and we expect stronger reactions to occur (Leeflang and Wittink 2001). Given that these resource constraints appear both at the strategic and tactical level, we do not assume a priori that differences exist between these action types.

2.1.3 Control variables

We included several control variables to account for differences between categories and regions (for tactical actions only). These differences potentially lead to different reaction strengths across categories and regions above and beyond those explained by the aforementioned behavioral factors. At the category level we account for category growth and category concentration. As category growth can influence the interest firms have in a particular category and therefore affect competitive activity, controlling for the growth allows us to investigate the extent of competitive reactions in an equal way across categories (e.g. Ramaswamy, Gatignon and Reibstein 1994; Steenkamp et al. 2005). Similarly, the amount of firms active in a category can influence the extent of competitive activity (Ramaswamy, Gatignon and Reibstein 1994), and hence we control for it through the market concentration. For the tactical actions, we also control for potential differences between the sales force areas. We capture the consumer market size through the population level of an area, and the physician market size through the amount of physicians per 1000 inhabitants (i.e. physician concentration). To capture demand side differences between areas, we capture health status of the population within an area through income and education level (e.g. Geronimus and Bound 1998), with higher income and higher education areas expected to reflect those areas with a better health status.

2.2 Data and methodology

2.2.1 Research setting and data description

Our research focuses on the sales force as a marketing instrument, because this setting is an example where the dichotomy between strategic and tactical actions is highly pronounced. In this setting, higher management determines the general strategy by allocating total brand budgets. This allocation is based partly on own (past) marketing effectiveness, sales force size and competitive activity. Increasing or decreasing budgets for certain products then corresponds to strategic actions in this setting (Zoltners, Sinha and Lorimer 2008). Once this allocation across products has been determined, it is communicated to junior managers, who implement the strategy by allocating sales personnel to products depending on available budgets (Zoltners, Sinha and Lorimer 2008). Based on in-the-field feedback, deviations from the outlined strategy can occur in order to cater to customer needs or respond to activity by competing sales people[2]. This gives rise to tactical actions. For example, increasing visits to a customer to promote a certain product knowing that a direct competitor visited last week is considered a tactical action.

We obtain our results using a unique single-source panel data set of 1502 representative British physicians covering the years 1987-2006. Over this period, these physicians recorded on a daily basis all the new prescriptions[3] they wrote as well as the detailing visits by pharmaceutical companies they received. We thus have a complete view of the sales and personal selling activity by all brands active in the category.

The 14 molecules on which we focus cover three therapeutic classes, namely hypertension (9), stomach ulcers (3) and analgesics (2). For these therapeutic classes, the different drugs marketed using the same molecule are substitutable, but substitution between categories is not possible. This is a unique feature of the dataset which derives from firms agreeing to co-market a molecule to share marketing costs[4] (see Ching and Ishihara 2012 for a prior application). The

[2] Leeflang and Wittink (2001) state that a similar distinction exists in a (FMCG) retail context: Promotional calendars determine the budget allocation, but deviations from the calendar are possible in response to competitive actions.
[3] These are actual prescription decisions, as repeat prescriptions have been excluded from the dataset.
[4] Being in a co-marketing agreement does not mean that the firms do not compete with each other, which would go against anti-trust laws. In the data this is confirmed in two ways. First, most physicians are visited by representatives from multiple manufacturers, and all manufacturers are active in all regions of Great Britain. Thus, we do not find evidence for market division in our data. Second, we observe a substantial amount of brand switches within each category despite the molecules being the same. Such switches seem to point to detailing effects, which are positive on average (Kremer et al. 2008). Hence, brands are actively and successfully trying to influence physicians to change their prescription behavior.

advantage of the co-marketing setting is that we control for differences in drug efficacy which can influence the prescription rate of drugs. If one drug is more efficacious than another, the prescription rate for this drug will increase due to other factors than detailing activity. Given the impossibility of accurately measuring efficacy of different drugs due to side effects, tolerance dosage etc., controlling for efficacy allows us to study competitive reactions driven by sales force attacks in isolation.

In Appendix 2.A we provide more detail on these drugs used in the analysis. In addition to the branded variants, a generic is also present. After patent expiration, lower-priced variants of branded drugs based on the same molecule are allowed to enter the market. These generic drugs rely on price as their main marketing instrument, and generally deploy less marketing effort before and after their introduction to the market (Osinga, Leeflang and Wieringa 2011) [5].

For our analyses, we analyze the prescription and detailing data at the quarterly level for strategic actions and at the monthly level for tactical actions, as these are the levels on which decision making takes place (Dong, Manchanda and Chintagunta 2009; Pauwels, Aksehirli and Lackman 2016). We obtain two sets of time series by aggregating across physicians in two ways: one set at the brand level reflecting strategic actions, and one set at the brand-regional level reflecting tactical actions. The regions used are based on the locations of the physicians recorded in the data set and correspond to ten NUTS-1 regions for Great-Britain (*Eurostat* 2014). While these regions may not correspond exactly to the sales regions used by individual firms, they are disaggregate enough to capture differences in regional characteristics (population size, ethnicity, urbanization, number of physicians, sales force size etc.) to reflect differences normally encountered in such regions (e.g. Dong, Janakiraman and Xie 2014; Stremersch, Landsman and Venkataraman 2013; Zoltners and Sinha 2005).

2.2.2 Obtaining reaction and sales elasticities

Our analysis continues in two stages. In the first stage, we apply a novel seemingly unrelated error-correction model (SURECM) to the sales and detailing time series to obtain the short- and long-term reaction elasticities characterizing the strength of competitive reactions, and

[5] This does not mean that generic brands do not use detailing at all. In our data, we observe sufficient details for generic brands to be able to apply time-series methods. However, the number of details tends to be lower than for branded variants.

their associated own- and cross-sales impact. We perform this analysis twice for each drug, at the brand level (to obtain elasticities at the strategic level) and at the brand-regional level for each region (to obtain elasticities at the tactical level). In the second stage, we use weighted least squares regression to relate the estimated reaction elasticities to our set of moderating variables to explain differences in reaction strength for both types of strategies.

Our model specification should allow us to capture several characteristics. First, the model should allow us to capture the short- and long-term effects of competitive actions. Second, it should allow us to capture the associated own-and-cross-sales impact of these actions as well. Third, the model should produce parameter estimates for each brand within a category. Fourth, the model should allow for correlations between brands within the same category. Fifth, the model should allow for the potential endogeneity between the sales and detailing series within a brand. Our seemingly unrelated error-correction model (SURECM) addresses these five points in a parsimonious way.

Before we describe our model, we first test whether the (logged) time series have a unit root. As recent literature has pointed out that panel unit root test have greater power than individual unit root tests, we applied the test of Levin, Lin and Chu (2002) to our series. Here, we used the test with brand-specific intercepts, lag-lengths, and included a trend. This test shows that at the brand level a unit root is only present in one category, while a pooled test across categories shows no unit root. At the brand-regional level none of the tests show a unit root. The Maddala-Wu (1999) test confirms the result for the brand-regional level, but also shows no evidence of a unit root at the brand level. We conclude that all series fulfill the stationarity condition except for one category. We therefore leave this category (Cimetidine) out of our further analyses.[6]

2.2.2.1 Model for reaction and sales elasticities of strategic actions

To capture both the short- and long-term effects of competitive reactions at the strategic level, we start with an error-correction specification (see for example Fok et al. 2006; Gijsenberg 2014; Van Heerde et al. 2013) that links the detailing effort of a brand b $(b = 1, \dots, B_c)$ in category c $(c = 1, \dots, 14)$ in quarter t (Det_t^{cb}) to the detailing effort of the competing firms in a

[6] A robustness check which includes this category shows that the results are highly similar when we include this category, and that none of the substantive conclusions change.

category ($\mathrm{Det}_t^{cj}, j \neq b$). We specify the following detailing equation, where we take logs of both the detailing (Det) and prescriptions (Rx) variables to interpret the parameters as elasticities:

$$(1)\ \Delta \ln \mathrm{Det}_t^{cb} = \alpha_0^{cb} + \alpha_1^{cb} \Delta \ln \mathrm{Rx}_{\mathrm{t}}^{cb} + \sum_{j \neq b} \alpha_{2:(1+B_c)}^{cj} \Delta \ln \mathrm{Rx}_{\mathrm{t}}^{cj} + \sum_{j \neq b} \alpha_{(2+B_c):(2B_c+1)}^{cj} \Delta \ln \mathrm{Det}_{\mathrm{t}}^{cj}$$

$$+ \phi_1^{cb} \Bigg[\ln \mathrm{Det}_{t-1}^{cb} - \gamma_1^{cb} \mathrm{trend}_{\mathrm{t}} - \gamma_2^{cb} \ln \mathrm{Rx}_{\mathrm{t}-1}^{cb}$$

$$- \sum_{j \neq b} \gamma_{3:(2+B_c)}^{cj} \ln \mathrm{Rx}_{\mathrm{t}-1}^{cj} - \sum_{j \neq b} \gamma_{(3+B_c):(2B_c+2)}^{cj} \ln \mathrm{Det}_{\mathrm{t}-1}^{cj} \Bigg] + \epsilon_{1,t}^{cb}$$

Here, Δ denotes the first-difference operator such that $\Delta X_t = X_t - X_{t-1}$. The first parameters of interest in this equation are $\alpha_{(2+B_c):(2B_c+1)}^{cj}$, which denote the short-term detailing effects of competing brands on the detailing of brand *b*. They reflect the effect of a unit change in competing detailing on the detailing effort of brand *b*, and can thus be interpreted as the *reaction elasticity*. This reaction elasticity can be significant and positive, significant and negative, or non-significant. We call the first case retaliation, the second case accommodation and the third case no-reaction (e.g. Steenkamp et al 2005). The long-term reaction elasticity is captured by the parameters $\gamma_{(3+B_c):(2B_c+2)}^{cj}$, reflecting the cumulative long-term effects of a one-period unit shock in competitive detailing (Fok et al. 2006; Van Heerde et al. 2013). Beyond these effects of interest, we also capture the short- and long-term effects of own prescriptions on the detailing decision of brand *b* (α_1^{cb} and γ_2^{cb}) as controls. Similarly, this decision could be influenced by competitors' prescription levels, the short- and long-term effects of which we capture with $\alpha_{2:(1+B_c)}^{cj}$ and $\gamma_{3:(2+B)}^{cj}$. The linear trend variable related to γ_1^{cb} captures long-term market changes, given that our data cover the period 1987-2006 (e.g. Dekimpe and Hanssens 1995; Franses 2001; Van Heerde et al. 2013). Finally, the parameter ϕ_1^{cb} captures speed of adjustment towards the (long-term) equilibrium (Dekimpe and Hanssens 1999; Van Heerde et al. 2013).

Beyond the effects on detailing of a brand *b*, we are also interested in the effects of own detailing on the prescriptions of brand *b* (own-sales effects), as well as the effects of competing detailing on the sales of brand *b* (cross-sales effects). To obtain these effects at the strategic level, we introduce the follow equation:

$$(2)\Delta \ln \mathrm{R}x_t^{cb} = \beta_0^{cb} + \beta_1^{cb}\Delta \ln \mathrm{Det}_{\mathrm{t}}^{\mathrm{cb}} + \sum_{j\neq b} \beta_{2:(1+B_c)}^{\mathrm{cj}} \Delta \ln \mathrm{Det}_{\mathrm{t}}^{cj} + \sum_{j\neq b} \beta_{(2+B_c):(2B_c+1)}^{cj} \Delta \ln \mathrm{Rx}_{\mathrm{t}}^{cj}$$

$$+ \phi_2^{cb} \Bigg[\ln \mathrm{R}x_{t-1}^{cb} - \delta_1^{cb} \mathrm{trend}_{\mathrm{t}} - \delta_2^{cb} \ln \mathrm{Det}_{\mathrm{t-1}}^{cb}$$

$$- \sum_{j\neq b} \delta_{3:(2+B_c)}^{cj} \ln \mathrm{Det}_{\mathrm{t-1}}^{cj} - \sum_{j\neq b} \delta_{(3+B_c):(2B_c+2)}^{cj} \ln \mathrm{Rx}_{\mathrm{t-1}}^{cj} \Bigg] + \epsilon_{2,t}^{cb}$$

With this equation we capture the short-and long-term own- and cross-sales elasticity. The short-term *own-sales elasticity* is captured by β_1^{cb}, reflecting how a unit shock in detailing for brand *b* affects its prescriptions. In a similar vein, the short-term *cross-sales elasticities* are captured by the parameters $\beta_{2:(1+B_c)}^{cj}$, reflecting how the sales of brand *b* are affected by competitive one-unit detailing shocks. The long-term own elasticity is given by the parameter δ_2^{cb}, while the long-term cross-sales elasticities are captured by $\delta_{3:(2+B_c)}^{cj}$. As the number of prescriptions for brand *b* in quarter *t* might be related to the short- and long-term level of detailing of competitors, we include these effects in the model through $\beta_{(2+B_c):(2B_c+1)}^{cj}$ and $\delta_{(3+B_c):(2B_c+2)}^{cj}$ respectively. As before, the linear trend associated with δ_1^{cb} captures long-term market changes over time, while the speed of adjustment towards the (long-term) equilibrium is given by ϕ_2^{cb}.

Taken together, Equation (1) and Equation (2) specify for each brand the relevant variables affecting detailing and prescriptions. Given that we specify two equations per brand, on the category level we end up with systems of 4-8 equations depending on the category. Before we explain our estimation procedure, we first introduce the equations used at the brand-regional level, as they are conceptually similar to the above equations. We use these equations to investigate the reaction and sales effects at the tactical level.

2.2.2.2 Model for reaction and sales elasticities of tactical actions

Similar to the equations introduced previously for strategic actions, we introduce an error-correction model to capture the short- and long-term reaction effects of tactical actions. For a brand b $(b = 1, \dots, B_c)$ in category c $(c = 1, \dots, 14)$in area k $(k = 1, \dots, 10)$ in month *s* of quarter *t* we specify the following equation for its detailing level:

$$(3)\Delta \ln \frac{Det_{s,t}^{cbk}}{Det_{t}^{cbk}}$$

$$= \alpha_0^{cbk} + \alpha_1^{cbk}\Delta \ln \mathrm{Rx}_{\mathrm{s,t}}^{cbk} + \alpha_2^{cbk}\Delta \ln \mathrm{Rx.remaining}_{s,t}{}^{cb}$$

$$+ \sum_{j\neq b} \alpha_{3:(2+B_c)}^{cjk}\Delta \ln \mathrm{Rx}_{\mathrm{s,t}}^{cjk} + \sum_{j\neq b} \alpha_{(3+B_c):(2B_c+2)}^{cjk}\Delta \ln \mathrm{Det}_{\mathrm{s,t}}^{cjk}$$

$$+ \phi_1^{cbk}\left[\ln \frac{Det_{s-1,t}^{cbk}}{Det_{t}^{cbk}} - \gamma_1^{cbk}\mathrm{trend}_{\mathrm{s,t}} - \gamma_2^{cbk}\ln \mathrm{Rx}_{\mathrm{s-1,t}}^{cbk}\right.$$

$$\left. - \sum_{j\neq b} \gamma_{3:(2+B_c)}^{cjk}\ln \mathrm{Rx}_{\mathrm{s-1,t}}^{cjk} - \sum_{j\neq b} \gamma_{(3+B_c):(2B_c+2)}^{cjk}\ln \mathrm{Det}_{\mathrm{s-1,t}}^{cjk}\right] + \epsilon_{1,s,t}^{cbk}$$

In this case, the dependent variable $\Delta \ln \frac{Det_{s,t}^{cbk}}{Det_{t}^{cbk}}$ captures the amount of detailing calls deployed in month *s* out of the total possible allocation Det_t^{cbk} for region *k* in quarter *t*. This way, we capture the budget constraint which junior managers are faced with when deciding on the amount of detailing calls to make. The short-term *reaction elasticities* in this equation are given by the parameters $\alpha_{(3+B_c):(2B_c+2)}^{cjk}$, which capture the effect of a unit shock in competitive detailing on the detailing of brand *b*. As brand *b* cannot observe the relative level of detailing of a competitor *j*, we specify $\mathrm{Det}_{\mathrm{s}}^{cjk}$ in absolute terms. The long-term reaction elasticities are captured by the parameters $\gamma_{(3+B_c):(2B_c+2)}^{cjk}$. In this equation, we control for the fact that junior managers might anticipate their current level of detailing by taking into account the total amount of detailing for quarter *t* available. Therefore, we introduce the variable $\ln \mathrm{Rx.remaining}$, denoting the logarithm of the number of calls remaining within the quarter at time *s*. Additionally, we control for the short-and long-term effect of own prescriptions (α_1^{cbk} and γ_2^{cbk}) and competitive prescriptions ($\alpha_{3:(2+B_c)}^{cjk}$ and $\gamma_{3:(2+B_c)}^{cjk}$), as these could influence the detailing decision. Finally, the long-term trend γ_1^{cbk} captures the evolution of the market in area *k* over time, while the (long-term) equilibrium within this area is given by ϕ_1^{cbk}.

Beyond the detailing decision, we also seek to capture the own- and cross-sales effects at the tactical level. Similar to the case of strategic actions, we therefore introduce the following equation:

$$(4)\Delta \ln \mathrm{R}x_{s,t}^{cbk} = \beta_0^{cbk} + \beta_1^{cbk}\Delta \ln \frac{Det_{s,t}^{cbk}}{Det_t^{cbk}} + \sum_{j\neq b}\beta_{2:(1+B_c)}^{cjk}\Delta \ln \mathrm{Det}_{\mathrm{s,t}}^{cjk}$$

$$+ \sum_{j\neq b}\beta_{(2+B_c):(2B_c+1)}^{cjk}\Delta \ln \mathrm{Rx}_{\mathrm{s,t}}^{cjk}$$

$$+ \phi_2^{cbk}\left[\ln \mathrm{R}x_{s-1,t}^{cbk} - \delta_1^{cbk}\mathrm{trend}_{\mathrm{s,t}} - \delta_2^{cbk}\ln \frac{Det_{s-1,t}^{cbk}}{Det_t^{cbk}}\right.$$

$$\left. - \sum_{j\neq b}\delta_{3:(2+B_c)}^{cjk}\ln \mathrm{Det}_{\mathrm{s-1,t}}^{cjk} - \sum_{j\neq b}\delta_{(3+B_c):(2B_c+2)}^{cjk}\ln \mathrm{Rx}_{\mathrm{s-1,t}}^{cjk}\right] + \epsilon_{2,s,t}^{cbk}$$

The above equation allows us the capture the own-and cross-sales elasticities that we are interested in. The short-term *own-sales elasticity* is captured by β_1^{cbk}, while the corresponding long-term own-sales effects is captured by δ_2^{cbk}. Consistent with Equation 3, we specify the own-detailing variables relative to the amount of details within the quarter *t*. The short-term *cross-sales elasticities* are captured by $\beta_{2:(1+B_c)}^{cjk}$, and the long-term cross-sales elasticities are given by the parameters $\delta_{3:(2+B_c)}^{cjk}$. As before, we control for the short- and long-term effects of competing prescriptions on the prescriptions for brand *b* through $\beta_{(2+B_c):(2B_c+1)}^{cjk}$ and $\delta_{(3+B_c):(2B_c+2)}^{cjk}$. The long-term trend associated with δ_1^{cbk} captures changes in the market in area *k* over time, while the parameter ϕ_2^{cbk}reflects the (long-term) equilibrium within area *k*.

Equations (3) and (4) are specified for each brand *b* in each region *k*. For each region we therefore obtain a system of 4-8 equations per category, depending on the number of brands active within each category. Given the similar setup in models for strategic and tactical actions, we employ the same estimation procedure for both. The next section outlines this estimation procedure.

2.2.2.3 Model estimation procedure

The system of equations defined by Equations (1) and (2) for all brands in each category and Equations (3) and (4) for all brands in each category in each region suffers from simultaneity bias, because some variables occur both as dependent and as independent variables. We therefore

need to account for this simultaneity to avoid endogeneity problems and biased estimates. In addition, it is likely that the error terms $\epsilon_{1,t}^{cb(k)}$and $\epsilon_{2,t}^{cb(k)}$are correlated both within and across brands in a category. Ignoring such correlation can again lead to biased estimates. To address these issues, we estimate our models in a seemingly unrelated error-correction model (SURECM) framework which we introduce to the marketing literature after prior applications in economics and finance (e.g. Kim 2004; Sørensen and Werner 2006; Thompson, Sul and Bohl 2002). We jointly estimate all the ECM equations in the system to account for the simultaneity bias (e.g. Ataman, Van Heerde and Mela 2010; Li et al. 2016). At the same time, we correlate the errors of all equations within the system as in the SUR model (Zellner 1962), thereby accounting for the potential correlations that exist between all equations using a full covariance matrix. Thompson, Sul and Bohl (2002) show that this system can efficiently be estimated using the standard SUR estimator.

When estimating our models, the parameters $\phi_1^{cb(k)}$and $\phi_2^{cb(k)}$are initially multiplied through (e.g. we estimate $-\gamma_2^{cb(k)} \times \phi_1^{cb(k)}$). Following Van Heerde et al. (2013) we obtain the estimates of interest (e.g. $\gamma_2^{cb(k)}$) from this initial estimate and use the delta method (Greene 2003) to obtain its standard error.

The above model setup allows us to capture all the five characteristics deemed necessary before: It captures (1) the short-and long-term effects of competitive detailing on own-detailing and (2) the own-and cross-sales impact of these detailing effects for (3) each brand in each category. Furthermore, the SURECM estimation procedure assures that (4) correlations within and across brands are captured and (5) endogeneity between prescription and detailing series is captured.

Once we have obtained the estimates for all the elasticities, we correct the estimates for the strategic actions to account for potential aggregation bias (Leone 1995). We do because of the difference in temporal aggregation between the strategic actions (quarterly) and tactical actions (monthly). As we desire to compare the size of the elasticities, not accounting for this bias can affect our results. Following Bass and Leone (1983) we deflate our quarterly level elasticities and their associated confidence intervals with a factor three, thereby accounting for the difference in temporal aggregation.

2.2.3 Determining differences between strategic and tactical reaction strength

To explain the differences in reaction strength between strategic and tactical reactions, we link the reaction elasticities to our set of moderating variables defined before. This yields four models: two models categorizing the differences in reaction strength between short-term and long-term effects for strategic reactions, and two models categorizing the short-term and long-term effects for tactical reactions. The dependent variables in these models are the short- and long-term reaction elasticities obtained from the SURECM. We link these dependent variables to the moderators using weighted least squares regression, because our dependent variables are estimated quantities (see Saxonhouse 1976 for a justification hereof, and e.g. Frison et al. 2014; Nijs et al. 2001; Steenkamp et al. 2005 for applications in marketing). As weights we use the inverse standard error of the dependent variable. We operationalize our moderating variables in accordance with prior studies; see Table 2.B1 in Appendix 2.B for an overview. We compute the brand-specific factors at the brand level for the analysis of strategic reactions, and at the brand-regional level for the analysis of tactical reactions.

2.3 Results

Before presenting our results in detail, we first provide empirical evidence supporting the existence of strategic and tactical actions in our data. Next, we discuss our findings for each type of reactions observed (no reaction, retaliation or accommodation), and their associated strength, for both action types. We then discuss the sales impact of these reactions, and whether these reactions were justified or not from a firm performance point of view. Finally, we discuss the drivers of differences in reaction strength for both reaction types.

2.3.1 Existence of strategic and tactical reactions

Besides the differences in terms of decision maker depending on the firm level investigated (brand vs. brand-regional) outlined before, based on prior research we can derive some other conditions that set apart strategic from tactical actions. First, as strategic actions require more effort to implement and their effectiveness remains uncertain for a longer period of time (Wernerfelt and Karnani, 1987), the responses to strategic actions will be slower compared to

tactical actions (Chen, Smith and Grimm 1992). Based on a high frequency spectral analysis[7], we find that cycles for strategic actions are on average longer than those for tactical actions (2.90 vs. 2.69, $p < .05$ one-sided). This finding is in line with prior research suggesting that strategic actions take longer to implement, and our data reflect this assertion.

Second, prior research also suggested that strategic actions should provoke fewer responses than tactical actions, because responding to strategic actions takes more time and requires more effort (Chen, Smith and Grimm 1992). In our case, the absolute number of responses to tactical actions is higher by construction (365 elasticities vs. 92 elasticities), which does not provide a good indication of the total amount of actions. However, prior research also suggests that strategic actions are expected to have a stronger impact on a firms direction (Miller and Chen 1994). We find evidence for this suggestion by comparing the elasticities in a relative sense. In doing so, we find that a larger proportion of strategic actions (than tactical actions) have a significant impact (0.30 vs 0.17, $p < .01$) on the short run, while there is no difference on the long run (0.38 vs 0.45, $p > .10$). This increased impact provides validity to the distinction we make in this chapter. Furthermore, this illustrates that considering the strength of reactions as done in this study instead of the absolute number of reactions provides a different view than that provided by prior studies, and thus adds to our understanding of competitive interactions.

2.3.2 Nature and strength of strategic and tactical actions

The estimated models show a moderate to good fit to the data. For the strategic action models, we find that the McElroy system R^2 varies from 0.87 to 0.99 (mean = 0.97); the individual equation R^2 values vary from 0.13 to 0.97 (mean 0.63). For the tactical action models, the McElroy system R^2 varies from 0.49 to 0.84 (mean = 0.64), while the individual equation R^2 values vary from 0.01 to 0.56 (mean = 0.29). Based on the results of the SURECM model, we classify reactions as retaliatory (positive, significant elasticities), accommodating (negative, significant elasticities) or no reaction (non-significant elasticities). We present the results of this classification for both short- and long-term reactions in Table 2-2. In line with prior studies (Nijs et al. 2001; Steenkamp et al. 2005), we find that on the short-run, no reaction is the most prominent behavior observed for both strategic (69.5%) and tactical (83.1%) actions. When a

[7] See Harvey (1975) for technical details and Bronnenberg, Mela and Boulding (2006) for an application in marketing.

reaction takes place, we find that only retaliation takes places (30.5% and 16.9% of the cases respectively), while accommodation is absent for both strategic and tactical actions. The latter finding contrasts the aforementioned prior work, which found some, although limited, accommodating reactions. When we consider the strength of reactions, we find that retaliatory strategic actions have stronger short-term effects than tactical actions (0.53 vs 0.11, $p < .01$).

Table 2-2: Size and percentage of significant reaction elasticities for strategic actions (top panel) and tactical actions (lower panel)

Size (percentage) of significant reaction elasticities for strategic actions			
	Not significant*	Retaliation	Accommodation
Short-run	-0.005 (69.5 %)	0.53 (30.5 %)	NA (0.0 %)
Long-run	0.15 (61.9 %)	0.57 (38.1 %)	NA (0.0 %)

Size (percentage) of significant reaction elasticities for tactical actions			
Short-run	-0.0005 (83.1%)	0.11 (16.9 %)	NA (0.0 %)
Long-run	-0.03 (54.7%)	0.09 (45.3 %)	NA (0.0 %)

* Elasticities are classified based on the sign and significance of the estimates

For the long-run effects we find that no reaction is most observed for both strategic (61.9%) and tactical (54.7%) actions. Strikingly, we find that more long term reaction effects are significant than short term reaction effects. This indicates that the consequences of competitive actions need time to materialize. Again only retaliatory actions are observed; no accommodation occurs. In terms of reaction strength, strategic actions have stronger long-term effects than tactical actions (0.57 vs 0.09, $p < .01$). This shows that both strategic and tactical actions can have consequences on the long run. Combined with our previous findings for the short-term effects, these results show an interesting contrast with our prior expectations. We expected strategic actions to have stronger long-term effects overall, while tactical actions were expected to have stronger short-term effects overall. In contrast with this we find that in terms of overall strength, strategic actions are always larger in magnitude than tactical actions are. However, when we compare the pattern of magnitudes for both, we find that for strategic actions the long-run effect is larger than the short-run effect (0.57 vs 0.53, $p < .05$), while for tactical actions the

short-run effect is larger than the long-run effect (0.11 vs 0.09, $p < .01$). Concluding, contrary to our expectations we find that the overall strength of strategic actions is always larger than that of tactical actions, but in line with our expectations most of the effect to strategic actions materializes on the long-term, while most of the effect of tactical actions materializes on the short-run.

2.3.3. The justifiability of strategic and tactical reactions

Having quantified the strength of reactions, we next discuss the justifiability of both action types. We are concerned with the justifiability of an action as this determines whether the actions should have been taken in the first place or not. Consistently making wrong decisions can have severe consequences, especially in the case of strategic actions that are difficult to reverse.

We first consider the case of no reaction in Table 2-3. We find that not reacting for both strategic and tactical actions is usually the correct action, as the most common occurrence is the absence of a significant cross-sales effect - 54 out of 64 cases, or 84%, for strategic actions and 247 out of 303 cases, or 79%, for tactical actions. On the long-run, we find that 41 out of 57 (72%) cases for strategic actions and 131 out of 200 cases (66%) for tactical actions show no significant cross-sales effects. In addition, positive cross-sales effects are present for the remaining 10 (16%) and 16 (28%) cases for strategic actions, and for 56 (21%) and 69 (34%) cases for tactical actions. Negative-cross sales effects are absent for both strategic actions and tactical actions. Not reacting to competitive moves hence is a justified decision in all the cases considered, either because sales are unaffected or because sales are actually gained despite not reacting.

Table 2-3: Performance implications of not reacting

	Strategic actions (n = 92)		**Tactical actions** (n = 365)	
	Short-run (n = 64)	**Long-run** (n = 57)	**Short-run** (n = 303)	**Long-run** (n = 200)
Positive cross-sales effect	10	16	56	69
No significant cross-sales effect	54	41	247	131
Negative cross-sales effect	0	0	0	0

Next, we consider the consequences of retaliatory behavior, i.e. increasing sales force effort in response to increased competitive sales force effort. Table 2-4 summarizes our findings. We find that justified retaliation (i.e. with positive own-sales elasticity) occurs more frequently for strategic actions (23 out of 28 cases, 82%) than for tactical actions (46 out of 62 cases, 74%) on the short run. On the long run a similar pattern occurs, with 28 out of 35 (80%) cases for strategic actions and 124 out of 165(75%) cases for tactical actions showing positive own sales elasticities. We thus find that spoiled arms (Leeflang and Wittink 1996) occurs more frequently for tactical actions than for strategic actions due to the higher number of cases with negative own elasticities.

When we consider the cases where a justified decision was made, we notice another difference between strategic and tactical actions. When we consider the strength of the retaliation, as reflected in the cross-sales effect, we notice that significantly ($p < .05$) more strategic (78% short term, 68% long term) than tactical actions (46% short-term, 43% long term) have a positive cross-sales effect. This implies that in more than 50% of the case for tactical actions the retaliation was not strong enough to counter the action by the competitor. We thus find evidence here that for a substantial amount of actions taken by junior management the decision taken is not optimal given the circumstances.

Table 2-4: Performance implications of retaliation

	Strategic actions (n = 92)		**Tactical actions** (n = 365)	
	Short-run (n = 28)	**Long-run** (n = 35)	**Short-run** (n = 62)	**Long-run** (n = 165)
Own elasticity defender > 0	23	28	46	124
Cross-elasticity < 0	5	9	25	71
Cross-elasticity ≥ 0	18	19	21	53
Own elasticity defender ≤ 0	5	7	16	41

2.3.4 Moderators of reaction strength of strategic and tactical actions

Having assessed the performance impact of both action types, we conclude with an investigation of factors that influence the strength of competitive reactions. Knowledge hereof can assist managers in determining what types of reactions to expect from certain competitors, and help them improve their strategic and tactical planning. We present the results for the short-term effects in Table 2-5. We report the moderating effects on both the short- and long-term effects.

When we consider awareness, we find that the on the short-term the relative scale of the attacker only affects strategic actions, in a positive way (b = 0.162, p < .01). On the long run, the effect remains positive for strategic actions (b = 0.006, p < .10), but we find a significant negative effect for tactical actions (b = -0.006, p < .05). Hence, for strategic actions more visible actions elicit a stronger short- and long-term response by competitors as we expected, while we find that more visible actions discourage long-term reactions at the tactical level. Motivation to react, as measured by similarity of markets served, shows distinct differences between strategic and tactical actions. For strategic actions, reactions are weaker on the short term when the defender is a generic brand (b = -0.090, p < .10); none of long-term effects are significant. In contrast, for tactical actions reactions are stronger when the attacker is a generic brand both on the short-term (b = 0.014, p < .10) and on the long term (b = 0.079, p < .01). Similarly, when the defender is a generic brand the short-term (b = 0.005, p < .10) and long-term (b = 0.053, p < .01) reaction effects are stronger. Comparing these results, we can conclude that at the strategic level managers are less motivated to react to actions initiated by dissimilar brands, while at the tactical level managers are more motivated to react to actions initiated by dissimilar brands. Moreover, we find that this motivation effect at the tactical level is much stronger for long-term reactions. Finally, when we look at the capability to react, we find that for strategic actions an increased capability to react increases both the short-term reaction strength (b = 0.006, p < .01) and the long-term reaction strength (b = 0.003, p < .10), while this effect is not significant for tactical actions. In sum, we find that while the decisions taken by higher managers are affected by awareness, motivation and capability factors, those of junior managers are affected mostly by motivation factors, *and* in a way opposite to those of higher managers.

Table 2-5: Effects of moderating variables on strategic and tactical reaction strength for short- and long-term reactions

Moderator	Strategic actions		Tactical actions	
	Parameter short-term (*t-value*)	Parameter long-term (*t-value*)	Parameter short-term (*t-value*)	Parameter long-term (*t-value*)
Relative Scale Attacker	**0.162**[a]	**0.006**[c]	0.024	**-0.006**[b]
	(5.836)	(1.415)	(1.127)	(-2.121)
Market Similarity: Attacker Generic	-0.003	-0.029	**0.014**[c]	**0.079**[a]
	(-0.031)	(-0.084)	(1.712)	(4.217)
Market Similarity: Defender Generic	**-0.090**[c]	-0.018	**0.005**[c]	**0.053**[a]
	(-1.892)	(-0.066)	(1.752)	(5.379)
Relative Capability to Contest	**0.006**[a]	**0.003**[c]	0.0001	0.0003
	(2.818)	(1.764)	(1.083)	(1.392)
Category Concentration	**-0.173**[b]	-0.117	0.006	**0.056**[a]
	(-2.391)	(-0.519)	(1.129)	(10.294)
Category Growth	2.234	-0.567	**-0.005**[c]	**0.017**[b]
	(0.741)	(-0.059)	(-1.788)	(2.868)
Physician Concentration			0.004	**0.284**[a]
			(0.509)	(2.895)
Population Level			-0.000008	-0.000003
			(0.829)	(-0.392)
Income			0.0000009	-0.000003[c]
			(0.635)	(-1.549)
Education Level			**-0.340**[c]	-0.0001
			(1.909)	(-0.001)
Intercept	**0.790**[a]	0.647	-0.085	**-0.287**[a]
	(2.882)	(0.761)	(-1.346)	(-3.457)

[a] = p < .01 (two-sided) [c] = p < .10 (two-sided)

[b] = p < .05 (two-sided)

With respect to the control variables, we find that in markets with more competitors the reaction to strategic actions is weaker on the short-term (b = -0.173, p < .05), while no effect is found for tactical actions. On the long-term no significant effect for strategic actions is found, while the positive effect for tactical actions persists (b = 0.056, p < .01) While economic theory suggests more intense competition on non-price instruments (e.g. sales force) in markets with

fewer competitors (Lipczynski and Wilson 2001; Ramaswamy, Gatignon and Reibstein 1994), in line with our finding for strategic actions, the finding for tactical actions runs counter to this assertion. One explanation could be that junior managers face more pressure to achieve their own sales goals in markets with more competitors, increasing the strength of their reactions to maintain a sufficient share of category sales (Armstrong and Collopy 1996). The latter could also explain the positive long-term effect for category growth (b = 0.017, p < .05), where in high growth categories junior managers are faced with more pressure to achieve market share (which is a sales related performance metric), and in turn they need to react strongly to competitors to achieve this goal (Armstrong and Collopy 1996). In contrast, the short-term effect is negative, indicating reactions that are less strong (b = -.005, p < .10). Finally, we find that in areas with a higher education level reactions are weaker on the short term (b = -0.340, p < .10 This finding can be attributed to the decreased demand for drugs which can be attributed to healthier lifestyles of inhabitants in these areas.

2.4 Discussion

Firms continuously engage in competitive interactions with other firms and this determines firm performance. To succeed in this competitive game, knowledge of the expected strength, direction and consequences of competitive reactions are required. In this chapter we examine the short- and long-term differences between two types of actions: Strategic actions and tactical actions. The former determine the policies and strategies that govern the acquisition, use and disposition of resources to achieve firm objectives (Anthony 1965; Schultz, Slevin, Pinto 1987; Steiner 1969), and are implemented by higher management. The latter are actions implemented by more junior managers that concern the detailed deployment of resources (Anthony 1965; Schultz, Slevin, Pinto 1987; Steiner 1969). We empirically explore differences between these competitive actions in the setting of the pharmaceutical industry using the sales force as a marketing instrument. Using a unique, single-source panel dataset consisting of 1,502 British physicians and covering twenty years of prescriptions and detailing data in combination with novel time-series methods (i.e. seeming unrelated error-correction models) we quantify the short- and long-run strength and sales impact of both types of competitive actions, and provide insight on factors moderating reaction strength.

Our findings suggest that not reacting is the most common behavior on the short-run for both types of actions in accordance with prior research on advertising and promotions (e.g. Leeflang and Wittink 1996; Steenkamp et al. 2005). However, in contrast with this research we find substantial long-term effects, indicating that both strategic and tactical decisions carry weight into future periods, necessitating the evaluation of these long-term consequences. In the absence of accommodating behavior by firms, the only reactions are retaliatory in nature. For these, we find that both on the short- and long-run, strategic actions tend to elicit stronger reactions than tactical actions. This is consistent with Dutton and Jackson (1987) who posit that the higher threat of strategic actions provokes stronger responses from competitors. In contrast, as tactical actions have less far-reaching consequences, their threat is lower and accordingly we find that the strength of competitive responses is also lower. Interestingly, we also find that most of the effect of tactical actions materializes on the short-run while their long-run effects are weaker. The reverse is true for strategic actions. Hence, the effect of strategic actions is more important in future periods, while tactical actions have a more immediate influence on a firms' direction.

Knowledge about the effectiveness of past actions can assist in decisions to implement new actions. If we consider the sales impact of strategic and tactical actions, we find that not reacting was a sound decision in all of the cases for strategic actions and tactical actions. Retaliation is more often justified for strategic than for tactical actions. Moreover, even when retaliation is justified, in more than 50% of the cases for tactical actions the reaction is too weak to counter the competitive action, while this occurs less often for strategic actions. From this it emerges that strategic actions are more often taken in a justified way than tactical actions. Even though tactical actions have weaker effects on a firms' performance, compounding poorly justified decisions can amass to have strong negative consequences. Hence, improvements in the decision making process for the junior managers in charge of tactical actions could be warranted.

We also provide insights on when to expect stronger and weaker reactions in response to strategic and tactical actions. For strategic actions, we find that reactions by the defending firm are *stronger* on both the short- and long-run when actions are more noticeable due to the attacker having a higher market share. Furthermore, we find that defenders react more strongly when they are more capable of doing so, i.e. when they have the resources available to oppose a competitive move. Reactions to strategic actions are *weaker* on the short-run when the defending brand is a generic. Tactical actions are *stronger* on the short- and long-run when the attacking or defending

brand is a generic. The long-term effect is *weaker* when awareness of the competitor is higher. These results illustrate that there are clear differences in the drivers of decision making between strategic and tactical actions. Strategic actions are driven by a mix of awareness, motivational and capability factors, while tactical actions are almost exclusively driven by motivational factors and do not take into account capabilities (Chen 1996). These different drivers lead to moderators showing opposite signs depending on the firm level investigated, e.g. strategic actions are weaker when the defending brand is a generic, while tactical actions in this cases show stronger responses.

In sum, we find that strategic actions illicit stronger competitive response on both the short- and the long-run and that reaction decisions by higher managers are always justified and are driven by awareness, motivational and capability factors. In contrast, tactical actions show weaker response on the short term, while the reaction decisions of the junior managers in charge of these actions are not always justified and mainly motivationally based. Hence, while the strategic decisions taken by higher management are always correct, this does not hold for the tactical decisions taken by junior management. Even though the competitive responses to tactical actions are weaker and have more limited sales effects, the compounding of unjustified decisions could still have strong consequences. We attribute this poor performance to the sales objectives that junior management tries to achieve, stimulating a short-term orientation (e.g. Zoltners, Sinha and Lorimer 2012). Hence, while they are strongly motivated to react, by not carefully considering the full competitive landscape the actions of these junior managers may not always be as effective as they could be when more careful consideration would have taken place. Some ways to attenuate this are discussed next.

2.5 Managerial implications

Our study highlights the presence of strong reaction effects to competitive actions at different organizational levels. At the higher management level, our finding that competitive reactions are stronger for strategic actions underlines the importance of careful strategic planning. This provides clear guidelines for higher management. However, such planning is usually absent from manager's minds due to lack of competitor information and uncertainties when predicting behavior of competitors (Montgomery, Moore and Urbany 2005). Managers can use the findings in this chapter on factors influencing competitive reactions to obtain expectations of reactions

given their market situation. In addition, model-based decision support tools can assist in the strategic planning process by making the effects of competition and its consequences explicit (e.g. Dong, Manchanda and Chintagunta 2009; Manchanda, Rossi and Chintagunta 2004; Montoya, Netzer and Jedidi 2010).

At the junior management level, we find that retaliatory reactions to competing tactical actions are frequently unwarranted, even though this is not the case for not reacting. To improve decision making, additional training and coaching of regional managers can be an effective tool (Armstrong and Collopy 1996; Zoltners, Sinha and Lorimer 2012). Expanding the information available upon which to base decisions could be another way to assist junior managers make better decisions (Leeflang and Wittink 1996). For example, firms could make the same decision support tools that higher management uses available across the firm (Zoltners, Sinha and Lorimer 2012). Our finding that the use of sales goals as incentive structure for junior managers can negatively influence the decision making process by stimulating a short-term orientation suggests that an alternative incentive structure might be required as well. Moving away from the outcome-based control system implied by setting sales objectives and moving towards a behavior-based control system that emphasizes the selling process instead of its outcomes can be an effective way to do so and improve sales force performance (Anderson & Oliver 1987; Cravens et al. 1993).

2.6 Limitations and future research

Our research has some limitations that could not be addressed within the scope of this study. First, our data are limited to 14 categories with 2-4 brands per category, while studies with comparable methodology (e.g. Frison et al. 2014; Nijs et al. 2001; Steenkamp et al. 2005; Van Heerde et al. 2013) relied on the data richness of scanner data in the consumer packaged goods setting to obtain their results with a number of brands exceeding 200. Future research that expands our work using a larger sample over varying industries could provide more comprehensive generalizations of our findings.

Second, related to the above point, is that the pharmaceutical industry is a unique setting that, while offering us important insights in this, might hamper generalizability. However, the pattern of differences between strategic and tactical actions can similarly arise in e.g. the consumer packaged goods industry. For example, when it comes to advertising, there is a similar

decision structure in this industy regarding allocating and spending resources as we investigate in this chapter (Mantrala, Sinha and Zoltners 1992). Furthermore, when it comes to promotions most of these promotions are scheduled using a fixed promotional calendar, but deviations from the calendar can occur (Leeflang and Wittink 2001). The major difference between advertising and promotions on the one hand and personal selling on the other hand would be the lead time it takes to implement advertising and promotion changes (Leeflang and Wittink 2001), which would affect the size of short- and long-term elasticity estimates. However, given that different decision makers with different motivations are in charge of both decisions (e.g. investors and allocators in terms of Mantrala, Sinha and Zoltners 1992) in these cases as well, we could expect similar patterns with regard to the justifiability and drivers of decisions to occur.

Third, we only have data available on detailing activity by pharmaceutical firms. Other instruments such as sampling, journal advertising, symposium meetings and direct-to-consumer advertising[8] have all been shown to affect prescriptions (e.g. Janakiraman et al. 2008; Osinga, Leeflang and Wieringa 2010; Stremersch, Landsman and Venkataraman 2013), and controlling for these additional instruments could influence our findings. However, given that detailing accounts for a large share of marketing activities in Great Britain in this period (90%, Janakiraman et al. 2008), the effects of this omission are likely to be small.

Finally, we do not observe drug prices, which are a major differentiator between generic and branded drugs and can affect their prescription behavior. However, Gonzalez et al. (2008) show that only 17% of physicians switch their prescriptions to generic drugs due to price, and other studies suggest that physicians are not price sensitive (Leeflang and Wieringa 2010) and/or generally unaware of prices (Kolassa 1995). Additionally, in Great-Britain agreements between the National Health Service (NHS) and the pharmaceutical industry fix prices for most drugs, effectively eliminating most price competition between manufacturers (*National Health Service*, 2014).

[8] We note that direct-to-consumer advertising (DTCA) is not allowed in Great-Britain, the market we study. However, it is allowed in the United States and New Zealand, and could therefore influence prescriptions and spending on other marketing instruments