Underlying Mechanism behind Word Responses

in Competitive Dynamics

by

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ABSTRACT

The traditional action-response perspective has largely ignored the role of language in competitive dynamics. In this study, I treat language (i.e., word response) as an alternative way to react to rivals when a firm is attacked, in addition to no reaction and action-based reaction. Word response is a specific and public announcement of a focal firm's potential move in reaction to a competitor's word or action attack. To explore the underlying mechanism behind word responses, I aim to answer two major questions. The first question is under what situations are responders motivated to use words as competitive responses? For this question I emphasize characteristics of the action, the market, and the actor, using measures such as action type, market dependence of the responder, multimarket contact of the responder in the market, and the competitive aggressiveness of the actor. The second question is what kinds of responders are more likely to use words as competitive responses? For this question, I focus on responder characteristics, such as firm reputation, CEO tenure, and CEO duality. According to Porter's competitive signaling theory, I argue that responders can use words in reaction to an attack in order to test the waters, deter rivalry, and demonstrate toughness because word responses require few resources, can be accomplished quickly, are reversible, while at the same time still carrying some commitment. Besides incorporating language into the action-response perspective, my dissertation also further integrates the upper-echelons perspective with competitive dynamics research, providing a more realistic and complete understanding of competitive engagement. I test my theory in the consumer electronics (CE) industry with 20 major global CE manufacturers between 2007 and 2014.

DEDICATION

To Mom and Dad for their

constant love and support

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CHAPTER 1

INTRODUCTION

1.1 Motivation and Research Questions

Studies on the actions and reactions of firms have been an influential body of

research in strategic management for over a decade (Chen & Miller, 2012; Smith, Grimm,

& Gannon, 1992). Firms can gain advantages over competitors through actions, while

those advantages can be eroded through reactions from competitors if they respond in

time and effectively (Porter, 1985). Compared to macro-organizational phenomena,

competitive dynamics (CD) scholars are particularly interested in this micro-behavioral

viewpoint and focus on exploring antecedents and consequences of competitive actions

or responses (Chen & Miller, 2012). For example, Smith and colleagues' (1992; 1991)

seminal works suggest that characteristics of the action, the actor, the environment, and

the responder are all important determinants of competitive response. Their action-

response model has become a cornerstone for much CD research (e.g., Chen, 1996;

Ferrier, Smith, & Grimm, 1999; Marcel, Barr, & Duhaime, 2011; Young, Smith, &

Grimm, 1996)

However, the extant CD literature has considered actions as the only type of

competitive behavior. A key argument in action and response research is that when a firm

(the actor) initiates an action that challenges a rival's competitive position, its rival (the

responder) can choose not to respond at all, or to respond with an action if the responder

is aware of the challenge, motivated, and capable of responding (Chen, 1996; Chen &

MacMillan, 1992). Yet, besides responding with action, top executives may also respond

verbally to defend the firm's market position after an attack. For instance, after McDonald's introduced McPizza in selected restaurants to test the market in 1989, Pizza Hut immediately announced that "'every place you see a McDonald's pizza, you're going to see a war" (Shapiro, 1989). As Porter (1980) noted, responders can use language to indicate their intent to retaliate, which may deter the actor from following through with a planned move or lead to the withdraw of a move already taken.

Therefore, the overriding objective of my dissertation is to understand the competitive use of language as a response based on the action-response perspective. Rooted in Austrian economics and influenced by industrial/organization economics and game theory, competitive dynamics research has paid very limited attention to the role of language use in competitive interaction. One exception is Rindova and colleagues' (2004) paper, which makes an important contribution by discussing how language can be used to engage employees and stakeholders in competitive settings by drawing their attention and shaping their minds into an enemy mode. But the focus of their study is mainly how language influences the perceptions of stakeholders and it does not consider direct competitors. In this dissertation, I aim to study the role of language in direct competitive engagement and incorporate it more closely with the literature on competitive actions and reactions.

Perhaps the major reason why scholars have tended to ignore language use in CD is because they implicitly assume that talk is cheap and thus not to be taken seriously. In economics, the term "cheap talk" refers to costless, nonbinding, and non-verifiable communication among players to a game (Farrell, 1987). Crawford and Sobel (1982)

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argue that if the incentives of two parties are not aligned, the communication between them will quickly reach a "babble equilibrium" in which the content of language is totally irrelevant. Cheap talk theory predicts that language does not affect the payoff of a game when the information receiver believes the sender has incentives to lie. Obviously, competitors, by definition, have conflicting interests. Following the reasoning of cheap talk theory, language from competitors will be ignored by firms and thus be of no value. Yet, there are several reasons why I believe this conclusion is incorrect.

First, as Porter (1980) noted, language from competitors is often not just bluffs, but can include viable commitments and warnings. It is important for a firm to understand what its rival might try to do next or what the rival expects the firm to do next, even though there is a possibility that the language is deceptive, because ignoring signals from competitors is the same as ignoring competitors altogether (Porter, 1980). My contention is that language-based actions and responses can carry important information about rivals, thus they should not be ignored.

Second, talk becomes more important to the extent that the information revealed is verifiable and/or has longer-term consequences for the talking firm and its stakeholders. I think that the implications of public statements for firm and managerial reputations work to bond the speaker to the statements. For example, a market leader can enjoy a strong reputation for releasing credible information for coordination among rivals (Ferrier, 1997), while firms that frequently issue false or misleading statements find their statements completely discounted (Kim, 1996; Stocken, 2000). Because a false announcement can be costly when information is verifiable or becomes verifiable (Farrell,

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1987), the implications of verbal communication can fuel concern about future losses from damaged reputations for not providing accurate information, leading to care in making statements (Kim, 1996).

Further, it is easy to observe examples of firms that, when challenged by a rival with an action or a word action, choose to respond verbally via a variety of channels, such as technology conference interviews, industry journals, business newspapers, or earnings conference calls with securities analysts. Therefore, I think it is crucial to achieve a better understanding of the role of language in CD, particularly the issue of word response, a competitive use of language as a way to defend firm market position.

I define word response as a specific and public announcement of a focal firm's potential move in response to a competitor's word or action attacks. Word response expresses a responder's intent to retaliate although in a reversible way. According to Porter (1980), pre-move announcements are important competitive signals. Word responses can serve as preemptive gestures or threats, warning the rival that an announced action, if taken, will lead to a swift and painful retaliation. By doing so, a verbal response can express a firm's commitment to retaliate as a threat to the attacker and to deter further attack.

To clarify the definition of word response, it is important to note that word response is not an announcement of an action that has already occurred (e.g., in responding to firm A, firm B acquired firm C yesterday) or an announcement of a concurrent action (e.g., a competing product will be available on the market today/tomorrow; contracts have been signed today to build a new plant in city xx).

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Researchers commonly use such public statement to identify actions. I intentionally leave these public statements outside the scope of my research because they "leave one in such a position that the option of nonfulfillment no longer exist" (Schelling, 1960). Such announcements are, in effect, action responses, but not word responses.

There are two major reasons why I study word response in competitive dynamics. First, as I noted above, word response is not costless cheap talk and should not be ignored by either competitors or scholars. Second, I believe there are different underlying mechanisms between using word response and action response. For example, word response may be strategically more desirable when the responder feels the need to respond but does not want the response to escalate into a war. Under such circumstances, a word response will convey the intended message to the rival without causing any financial harm. It is my belief that a word response, when used properly, may even subdue the enemy without an actual fight. Moreover, compared to language, actions might be too costly or too late to be effective (Moore, 1990). For instance, a word response noting that "we are mulling over adding capacity [in a rival's home territory]" is less costly and quicker than actually building a plant.

However, CD scholars have largely ignored those differences between words and actions. Although Ferrier and colleagues did take overt signaling into consideration when they measured actions (Ferrier, 2001; Ferrier, Fhionnlaoich, Smith, & Grimm, 2002; Ferrier & Lyon, 2004), they did not provide different theorizing to separate words and actions. Here, I assert language can be an alternative competitive tool for a firm to communicate with competitors and word responses can be an alternative form of

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competitive response compared to action response and non-response. Building on the traditional action-response perspective, my dissertation aims to extend the CD literature by addressing the following research question:

When (under what conditions) is a word or action attack more likely to induce a word response?

I integrate word attack and word response into the traditional action-response model proposed by Smith et al (1992) and focus on some conditions that make the word response more likely to occur. I suggest that action type (strategic action relative to tactic action), market dependence of the responder, multimarket contact (MMC) of the responder in the market, and competitive aggressiveness of the actor are possible important determinants of word response.

First, compared to tactical actions (e.g. price cuts, promotions, distribution and service improvements), strategic actions (e.g. capacity changes and major product introductions) require more time and more commitment of resources to respond (Chen & Miller, 1994; Chen, Smith, & Grimm, 1992; Smith et al., 1991). Previous CD research suggests that strategic actions are less likely to evoke competitive responses because the responder need more time to figure out what is going on (until uncertainty removed) and more implementation efforts to realize it (Chen et al., 1992). Contrastingly, word responses are quick and require few resources allocation. Further, a pre-announcement of retaliation can test the waters and help the responder better understand the opportunity/threat carried with the strategic action.

In addition to action type, MMC of the responder in the market is also suggested to influence the likelihood of word response. MMC refers to a situation in which two or

more firms compete with each other in more than one product or geographic market (Yu & Cannella, 2012). The notion of "mutual forbearance" argues that firms competing against each other in multiple markets will hesitate to compete aggressively because the cost of warfare across multiple markets is too high (Edwards, 1955). Competitors are motivated to respond if there is high level of MMC, in other words, a high level of interdependence, because the attack may be taken as a betrayal to the "mutual forbearance". However, a competitive war across multiple markets is very costly. A pre-announcement is less risky and may also perform the warning function, informing the rival that an action "crosses the line". Further, word responses are quicker than action responses and a quick response signals a stronger commitment to defend a market position.

Similarly, I also suggest that the market dependence of the responder may increase the likelihood of word response. Market dependence is the extent to which the responding firm relies on the market(s) affected by an action (Chen & MacMillan, 1992). Evidence suggests that the more dependent the market under attack, the more likely the attacked rival will respond and match the initial action. The theoretical explanation for this observation is that actions initiated in strategically dependent markets pose direct threats to a responder, increasing its motivation to fight back (Chen & Miller, 1994; Chen et al., 1992). However, an action response in such a setting could be very costly and risky. If the cost of retaliation exceeds the benefits, an action response may not be feasible (Chen & Miller, 1994). Rather, a word response may be a good choice because a) it can carry commitment and be used to threatening; b) it is associated with low risk with regard

to provoking an all-out war.

Lastly, I consider an actor attribute that is often discussed by CD scholars usually as a predicted value —competitive aggressiveness. Competitive aggressiveness refers to the extent to which a firm defends its market position with actions. Two important dimensions are action volume and action complexity (Yu, Subramaniam, & Cannella, 2009). Research has shown that a firm that is aggressive in carrying out more and faster competitive actions than rivals will exploit more opportunities and close off more potential for rivals to retaliate. A tagged "aggressive attacker" indicates both its strong willingness and capability for a head-to-head competition (Clark & Montgomery, 1998). Such an actor will be less likely to halt an attack after receiving a signal from the responder. Makadok (2010) concluded that firms with superior capabilities tend to ignore mechanism of a rivalry restraint. Instead of interpreting word response as an attempt of rivalry deterrence, there is good possibility that aggressive attacker will interpret a word response as an aggressive move (not a defensive move) and initiate more attacks. Therefore, the responder may take this actor attribute into consideration and be less motivated to use word response when the initiated action came from an aggressive rival.

By focusing on characteristics of the responder, my dissertation also aims to explore the following research question:

What factors associated with the responder affect the likelihood that a word response will be enacted?

Besides exploring when a firm is more likely use word response as a response, it is equally important to understand what firms are more likely to use word response. In other words, what kinds of firm/CEO characteristics are related with the likelihood of

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word response? Building on the signaling literature and upper echelons theory, I suggest three antecedents: firm reputation, CEO tenure, and CEO duality.

First, firm reputation refers to "stakeholders' perceptions about an organization's ability to create value relative to competitors" (Rindova, Williamson, Petkova, & Sever, 2005). Reputation has been well recognized as an important source of competitive advantage (Basdeo, Smith, Grimm, Rindova, & Derfus, 2006; Hall, 1992). Many studies have demonstrated a positive relationship between firm reputation and firm performance (Deephouse, 2000; Fombrun & Shanley, 1990; Roberts & Dowling, 2002). Although firm reputation is very closely related with stakeholders, but I believe it also have implications for competitive behavior. For example, building on signaling theory, Basdeo and colleagues (2006) suggest that market actions and competitors' actions are closely related to firm reputation. The more actions a focal firm takes, the more information available for stakeholders to reduce perceived uncertainty, thus the more positive impression formed by the stakeholders. On the other side, the more actions taken by a rival, the more attention is diverted from the stakeholder and the more potential cost (retaliation cost) associated with a focal firm's action, thus the less likely for a positive impression formed by the stakeholder about the focal firm. Therefore, I think firm reputation is also closely related to word responses, and include it into my model. I argue that firms with good reputations are more likely to leverage the good impressions of stakeholder because the firms (the responders) know their words are relatively more powerful and credible to the actor. In other words, with a good reputation, there is more potential for a word response to successfully substitute to an action response. Moreover, a word response provides

more information than non-response, thus enhance reputation building by reducing uncertainty for the stakeholder.

In addition to firm characteristics, I also investigate some CEO characteristics by incorporating upper echelons theory because (1) CEO characteristics can reflect a firm's strategic choice about competitive response; and (2) CEOs or other top executives can issue word responses in the form of talk at technology conferences, interviews, or earnings conference calls. Two CEO characteristics I explore in this dissertation are CEO tenure and CEO duality.

CEO tenure has been proposed as a key influence on strategic choices (Hambrick, 1984). Upper echelons scholars argue that more experienced CEOs are better at leveraging existing knowledge and resources to exploit opportunities (Hambrick & Fukutomi, 1991; Miller, 1991). More experienced CEOs are more familiar with the rules of the game and the effects of their own strategic choices. Compared to non-response and action responses, word responses are competitive behaviors that exploit firm-level intangible assets such as reputation as a credible defender. In addition, several studies found that long-tenured CEOs are more likely to pursue Miles and Snow (1978)'s "defender" strategy, rather than "prospector" strategy. For example, Barker and Mueller's (2002) study showed that CEO tenure was negatively associated with R&D spending. The longer CEOs stay in their position, the more strategic emphasis on stability (Finkelstein, Hambrick, & Cannella, 2009) and the less aggressive they became. Word response is desirable because it may tone town rivalry to keep the stability of the competitive environment and it is not an aggressive response to the actor. Therefore, I

suggest that CEO tenure is positively associated with the likelihood of word response.

Besides the main effect of CEO tenure on word response, I will also discuss how CEO tenure changes the relationship between action type (strategic action vs. tactical action)/MMC/market dependence and word response. Upper-echelon research has suggests that long-tenured CEOs are more reluctant to initiate strategic change (Finkelstein et al, 1999). Similarly, I argue that the long-tenured CEOs are less motivated to respond with strategic action response because strategic action associated with more uncertainty and changes than tactical action. Instead, long-tenured CEOs are more likely to use word response, an alternative competitive response, when the initiating action is a strategic action rather than a tactical action. Upper echelons research has also shown that long-tenured CEOs are negatively related with risk-taking (Miller & Shamsie, 2001). When an attack occurs in an important market or the attack initiator has a high level of MMC with the responding firm, the responder does not want to risk provoking all-out war in an important market or multiple markets. Compared to an action response, a word response is less risky. Therefore, I suggest that longer tenured CEOs are more likely to use word response when market dependence is high or MMC is high.

CEO duality is another well-studied construct in upper-echelon research and has been widely discussed in corporate governance practice (Krause, Semadeni, & Cannella, 2014). CEO duality occurs when a CEO also serves as the board chairman (Finkelstein & D'Aveni, 1994). Similar to CEO tenure, there is no clear conclusion about the relationship between CEO duality and firm performance, but it is generally agreed that CEO duality indicates more CEO power (Krause et al, 2014). My prediction of the

likelihood of word responses is consistent with the awareness-motivation-capability

(AMC) framework, which argues that action responses are a function of the extent to

which the responder is aware of the action, is motivated to respond, and is capable of

responding. CEOs with more power increase their capabilities to speak publicly and

reveal their firms' intentions for the next move. Thus, I suggest that CEO duality is

positively associated with the likelihood of word response. Lastly, I also suggest a

moderation effect on CEO duality. That is, dual CEOs are more likely to use word

responses when market dependence is high, when MMC is high, or when the action is

strategic.

1.2 Contribution

My dissertation aims to make the following three contributions.

First, I incorporate the role of language into CD research using the foundational

action-response framework, expanding its range to include word response. Building on

organizational information processing theory, Smith and colleagues (1992) developed the

action-response perspective to explain how a competitive action can evoke responses

from rivals. However, language, an information-exchange tool, has seldom been

considered in CD research and we know little about why and how managers use language

as a tool in competitive engagement. The integration of language into CD also refines the

AMC framework. My study helps to explain why action responses are not always

forthcoming even when the responder is aware of the attack, motivated to respond and

capable to respond with actions.

Second, my study contributes to research on upper echelons and corporate

governance by further integrating CEO characteristics with competitive behaviors. For both CEO tenure and CEO duality, the effects on firm performance are not conclusive. Upper-echelons scholars have noted that the relationship between CEO tenure and firm performance is very complicated (Hambrick & Fukutomi, 1991; Simsek, 2007) and corporate governance scholars claim that CEO duality is one of the two "contemporary, and intensely contentious issues related to the governance of publicly-traded companies" (Dalton & Dalton, 2011, p405). A possible resolution is to look at more proximal consequences, and I consider the propensity to use word response is one of these. For the CD literature, there are already some studies to link upper echelons to competitive activities (Chen, Lin, & Michel, 2010; Cho & Hambrick, 2006; Hambrick, Cho, & Chen, 1996; Marcel et al., 2011; Smith et al., 1991), but few studies have examined at the role of the CEO in the response decisions. In a review paper, Chen and Miller (2012) also noted that it would be interesting to study how CEO shape competitive behavior.

Third, my dissertation contributes to the signaling literature, including studies on reputation. In his seminal work, Spence (1973) defined signals as information that is observable and costly to imitate. Building on signaling theory, management scholars have mainly focused on the information exchange between managers and important stakeholders (Connelly, Certo, Ireland, & Reutzel, 2010). For instance, research has shown that managers can signal unobservable quality via observable firm characteristics (e.g. board structure and CEO certification) to gain legitimation or enhance reputation (Certo, Daily, Cannella, & Dalton, 2003; Deephouse, 2000; Zhang & Wiersema, 2009). Studies on reputation are mainly drawing from Spence's school of signaling theory,

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namely signaling theory. Concentrating on the role of signals in a competitive context, the competitive signal perspective endorsed by Porter and a few marketing scholars suggests that signals can be any moves that carry competitor information, including both words and actions (Heil & Robertson, 1991; Moore, 1990; Porter, 1980). In my dissertation, I adopt Porter's view of a competitive signal to study word response and incorporate the role of reputation, a construct rooted in signaling theory. I argue that stakeholders' impressions are not only important for the focal firm to gain support from stakeholders but also represent an important predictor for competitive behavior.

1.3 Overview of Research Method

My model of word response is tested using a sample of 20 global consumer electronics (CE) manufacturers from 2007 though 2014. The sample selection is based on both theoretical and practical considerations. Theoretically, the industry of CE is selected because firms in this industry have a high degree of interdependence and the industry is well known for intense competitive interactions. An oligopolistic setting is a basic assumption for studying action and response because competitors need to be aware of each other's moves and can be influenced by each other's moves. Practically, there is rich public information about competitive behaviors (including both words and actions) in the CE industry. Managers in this industry are relatively more vocal than other industries because of environmental dynamism and high managerial discretion. The CE industry includes eight market sectors: computers and peripherals, mobile phones, televisions, home audio and cinema, video players, imaging device, portable players, and in-car entertainment. The 20 CE manufacturers are selected according to their sales rankings in

each market sector (source: EuroMonitor). I include manufacturers that are top 5 and

whose sales comprise at least 5% of a market sector in any given sampling year. I

consider those 20 CE manufacturers as representing all major players in the CE industry

(see Table 1).

Data about action-based and word-based competitive moves are collected from

Raven Pack (an archival database for Dow Jones news), Factiva, and firm websites (e.g.,

press releases and annual reports). I use structural content analysis to identify those

competitive activities. Cox proportional hazards regression models are employed to test

the hypotheses generated from the theoretical model of word response with the

occurrence of word response comprising my centered dependent variables.

1.4 Organization of the Dissertation

The reminder of my dissertation is organized as follows: Chapter 2 is the

literature review on CD (including action-response studies and multimarket research),

upper echelons perspectives (including integration of upper echelons perspective and

competitive dynamics, and signaling-related research (including signaling theory and

competitive signaling theory). In Chapter 3, a model of word response is developed.

Based on the well-known model of action-response, four attributes of the actor, the action,

and the market (i.e., action type, multimarket contact, responder's market dependence,

and competitive aggressiveness of actor) are proposed to explain when a word response is

more likely to occur, while three attributes about the responder (i.e., reputation, CEO

tenure, and CEO duality) are proposed to explain which responders are more likely to

choose a word response. Figure 1 shows my full model of word response. Nine

hypotheses are developed, including the main effects and moderation effects. Chapter 4

presents the research methods used for hypotheses testing, including sample selection,

variable measurement, and statistical analysis. Chapter 5 presents the results of

hypotheses test. In Chapter 6, I discuss limitation and implications of my dissertation and

identify some future research directions.

CHAPTER 2

LITERATURE REVIEW

2.1 Competitive Dynamics (CD)

Rooted in Schumpeter's (1934) concept of creative destruction, competitive dynamics (CD) is an area of study that is focused on firm competitive behaviors as the primary research object, rather than firm financial performance (Baum & Korn, 1996; Smith et al., 1991). CD scholars are particularly interested in the interactive and primarily purposeful process of competition. In general, CD literatures include studies focus on the dyad of action-reaction (i.e., the action-response model) and studies on multimarket competition. Both areas aim to explore the antecedents and consequences of competitive interactions, in order to answer how firms compete, why they compete in such a way, and how competition influences performance (Ketchen, Snow, & Hoover, 2004).

2.1.1 Action-Response Studies

The origin of the action-response perspective

Consistent with Schumpeter (1934, 1950) and Porter's (1980) argument that creative action will elicit reaction from rivals in an attempt to destroy the transient advantage created by the first mover, the action-response perspective argues that it is important to study competitive actions and responses because competitors can benefit from predicting rival's behaviors and postponing rival's retaliations. Action-response scholars claim that day-to-day competitive behaviors cannot be inferred from annual firm financial statements, and that the traditional "strategic choice perspective" (e.g., Miles & Snow, 1978) and Porter's "structural perspective" fail to capture the dynamics of actual

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strategic interactions between firms. Although game theorists are interested in modeling and predicting competitive behaviors, game theory cannot realistically capture competitive actions and responses in a single model because competitive actions and responses are too rich and full of possible combinations (Kreps, 1990). Moreover, game theory assumes "common knowledge" between players, while in actual competition, "players were unclear on what others would do, how they would behave, and what were their motivations" (Kreps, 1990, p138). The above benefits and limitations contribute to why Smith and colleagues move to the level of actual action and reaction and focus on the information transfer between players.

Drawing on communication-information theory (Shannon & Weaver, 1949), Smith and colleagues (1992) explain how a competitive action can evoke a response from a rival as a message is transmitted from a source to a receiver. This research reveals that an action response[1] (a market action taken by a competing firm to defend or improve its position) can be predicted by different competitive contingencies, such as characteristics of the actor (the entity initiating the competitive action), the action (a specific and detectable competitive move, such as new product introduction or price cut), the competitive environment (the context in which the actions take place), and the responder (the rival firm which is affected by the competitive action). The action-response perspective provided a foundation for understanding different antecedents of action responses for later CD studies. Next I will review both antecedents and consequences of competitive actions/responses (also see Tables 2 and Table 3).

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[1] I use the term "action" or "action response" in reference to traditional competitive actions – those that involve externally observable market-oriented moves made by firms to improve their competitive positions (e.g., price cuts, product introductions). In contrast, "word action" or "word response" refer to language-based competitive moves.

Antecedents of actions/responses

Given the significance of action responses, it is not surprising that considerable research has focused on a myriad of predictors of action responses. Regarding the actor, Smith et al (1992) argued that rivals are more likely to respond to the market share leader (supported), imitate the market share leader (supported), and respond with faster speed when attacked by market share leader (not supported) because the market share leader is closely watched by rivals, enjoying a favorable reputation for successful expansionary capability and the ability to exploit market opportunities, and oftentimes an opinion leader in the industry. Besides market share leaders, their study also identified that actors with long-tenured top management teams tend to be more predictable for rivals and thus evoke fewer action responses (supported), longer response times (supported), and less imitation (not supported). Smith and colleagues also suggested that actor's history as a price-cutter or strategic player could help predict action responses. They argued price-cutters tend to have more responses (not supported), shorter response times (supported), and higher rates of imitation (supported), while strategic players tend to have less responses (not supported), longer response times (supported), and lower rates of imitation (supported).

Regarding the action, MacMillan, McCaffery and Van Wijk (1985) applied Allison's (1971) decision-making model and proposed several important antecedents of action response lag, including the visibility, the perceived potential, the strategic type, the complexity, and the radicality of the action and the new product's misfit with organization. They found that except for visibility, all other antecedents loaded on two

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fairly distinct factors—strategic pressure (including perceived potential and perceived strategic attack) and organizational inertia (including radicality, complexity and organization misfit). While strategic pressure was found to accelerate response speed, organizational inertia was found to delay action response. Both MacMillian et al's and Chen and Miller's (1994) studies showed that high visibility and low levels of difficulty of action were especially likely to evoke responses from rivals. Similar to MacMillan et al's (1985) notion of strategic pressure, Smith et al (1992), Chen and MacMillian (1992) and Chen and Miller (1994) also found that the more important the market under attack to the responder, the more likely an action response will be forthcoming. Compared to tactical actions, strategic actions are less likely to provoke response because the information carried with strategic actions is uncertain and unfamiliar. For example, firms tend to wait and see when a competitor introduces a new product, but tend to respond quickly to tactical actions, such as price cuts. The effect of the action type on the likelihood of action response has received empirical supports from several studies (e.g., Chen et al., 1992; Smith et al., 1992). CD scholars also noted that the implementation requirement of an action is also an important antecedent of action response. The more difficult a competitive action is to perform the less likely rivals will respond to the action (Chen & Miller, 1994; Chen et al., 1992; Smith et al., 1992).

Chen and MacMillan (1992) developed the concept of action irreversibility and argued that the higher the cost of reversing an action, the less likely that it will provoke a action response. Chen, Venkataraman, Black, and MacMillan (2002) further investigated the construct of irreversibility through two dimensions—internal commitment (e.g.

resource relocation) and public commitment (e.g. industry publicity)—and found that internal and public commitments had opposite effects on action response likelihood, response lag, and likelihood of matching the initiating action. For example, from a behavioral point of view, they argue that 1) actions with high internal commitment represent strong signals for not backing down and are less likely to be withdrawn even if rivals respond, and thus rivals are not inclined to respond to such actions; 2) actions with high internal commitment are rarer than actions with low internal commitment because firms tend to use standard procedures to respond to stimuli, and thus for actions with high internal commitment, responders need to use responses with non-standard procedures, which they do not like; 3) actions with high public commitment indicate high visibility, and thus responders are more likely to be aware of such actions and more likely to respond; 4) actions with high public commitment invite more attention and scrutiny from the external community, and thus rivals experience more pressure from external community to respond to such actions. The concept of irreversibility is important for this dissertation since word response, as I define, is low on internal commitment and high on public commitment.

Regarding the market/environment factor, there are only a few studies that have directly tested the effect of environmental characteristics on action responses. By using six dimensions of environmental factors, including dynamism, uncertainty, complexity, resource scarcity, homogeneity, and interconnectedness, Smith et al (1992) explored the effect of three generic industry types: emerging growth industry (e.g. electronics manufactures), fragmented industry (computer retailer), and mature industry (e.g.

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domestic airlines). They found that firms in emerging growth industries tend to respond more, with slower speed, and less rate of imitation than firms in fragmented and mature industries. Ferrier and colleagues (2002) found that, although contrary to their prediction, performance-distressed firms competing in competition-buffered industry contexts (high entry barriers and high industrial concentration) are more likely to compete aggressively. Derfus et al (2008) have examined the moderating effect of two environmental characteristics: industry concentration and industry demand. Based on the evolutionary perspective, they argued that actions could spur responses because competitors need to search, act, and learn in order to improve performance. In more concentrated industries, it should be easier for rival to learn the action-performance relationship, but their results did not support this moderating effect. In addition, they found that in high demand industries, actions would spur less action responses because high-growth environments provide more opportunities for searching and learning, and thus limit the negative effect (e.g. market share erosion) of action on rivals.

Regarding the responder, small firms are less responsive to attacks and slower to respond (Chen & Hambrick, 1995). Responders with external orientation are more likely to respond and respond faster, while responders with structural complexity are less likely to respond (Smith et al, 1991). Smith and colleagues (1991) also found empirical support for their hypothesis that management teams with less industry experience are more likely to respond and respond early relative to experienced teams. But their findings do not support the prediction that responders with unabsorbed slack are more likely to respond. This may be because firms might consider the slack as a buffer between the focal firm

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and environmental change and thus there is less need to change. Hambrick, Cho, and Chen (1996) found that firms with heterogeneous top management teams (TMT) (i.e., functional, educational background, and tenure heterogeneity) are less likely to respond, and slower at responding. They also found that firms with larger TMTs responded less frequently than smaller ones. Ferrier et al (2002) found out TMT heterogeneity is negatively related with competitive aggressiveness under condition of financial distress. By adopting a cognitive perspective, Marcel, Barr, and Duhaime (2011) proposed another responder characteristic that might help predict action response—the managerial cognitive framework of strategic importance. If managers link a certain type of attack with poor firm performance in their minds, they are more likely to respond to such attack.

To review the action-response studies, I also need to mention the AMC framework proposed by Chen (1996). Motivated by literatures on organizational change, learning, and decision making (Allison, 1971; Dutton & Jackson, 1987; Lant, Milliken, & Batra, 1992; Schelling, 1960), Chen describes three necessary conditions for a competitive response, those are, responders are aware of the action, motivated to respond, and capable at responding. This theoretical framework has identified an important assumption in action and response studies: competitive asymmetry between any pair of competitors. Unique pre-battle competitive relationships can help predict rivalrous behavior in the market. For example, Chen (1996) proposed that market commonality and resource similarity should negatively relate to likelihood of competitive response. Young, Smith and Simon's (2000) findings basically have supported these arguments and found that as multimarket contact increases, competitors respond less frequently but faster and

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that resource dissimilarity is positively related to both frequency and speed of competitive response. (I will review multimarket competition in detail in the next section). In sum, the AMC framework is an important perspective in CD and has been cited quite often recently as a framework for explaining why firms respond certain ways or do not respond at all. (Haleblian, McNamara, Kolev, & Dykes, 2012; Livengood & Reger, 2010; Yu & Cannella, 2007)

Consequences of actions/responses

Consequences of actions/responses are also an important research area in action and response studies. Interest on the consequences of competitive moves centers on firm performance. Consistent with the Austrian school's prediction that firms need to continuously compete in order to recreate advantage, Young, Smith, and Grimm (1996) found that firms who implement more competitive activities than competitors (all others in the industry) over the course of a year enjoy better firm performance. Similarly, Ferrier (2001) tested how competitive aggressiveness (measured by attack volume, attack duration, action complexity, and unpredictability) influence firm performance, and found that attack volume and duration contribute to market share gain. Lee, Smith, Grimm, and Schomburg's (2000) study on long-distance telecommunications, personal computers, and the brewing industry showed that the faster of the new production introduction the higher abnormal return (e.g. first and second mover advantage. Ferrier and Lyon (2004) found that competitive repertoire simplicity—the tendency of firm to concentrate on just a few central activities—is negatively related to firm performance.

Aggressive responses can also lead to better performance by blocking the success

of competitors' actions (Porter, 1980), or by limiting the later movers' potential success. For example, Chen and Miller's (1994) study showed that action response ratio is negatively associated with firm performance, while controlling for the benefit of action response. Lee et al (2000) found out that the second mover can also enjoy advantages (a greater shareholder wealth effect than late movers) and that the faster the action response, the more erosion/less duration of the first mover advantage. Derfus et al's (2008) study also showed that the number and speed of rival firm actions has a negative impact on focal firm performance.

Limitations of the action-response perspective

Although the action-response model has been developed from communication-information theory and discussed a myriad of factors that can help predict competitive behavior, language, an important information-exchange tool, has been largely ignored. As shown in Figure 2, I incorporate language-based actions and responses into the traditional action-response model. Ferrier (Ferrier, 1997) is one of the few scholars who have recognized the potential of language-based action. He defined "overt signaling" as "a proclamation or `tough talk' made by representatives of the firm found in the media" (Ferrier, 1997). The short paper is published in Corporate Reputation Review, but it has attracted little attention from CD scholars. By testing market leaders and challengers in 14 industries, Ferrier confirmed his argument that overt signaling from leaders could help sustain industry leadership and preserve abnormal returns. However, this study provides limited theoretical explanation about why managers want to use overt signaling and how such overt signaling can influence competitor's behaviors. In his later works, Ferrier and

his colleagues also include overt signaling as a type of action but there is no theoretical argument associated with this special type of action (Ferrier, 2001; Ferrier et al., 2002; Ferrier & Lee, 2002; Ferrier & Lyon, 2004). Similar to Ferrier, Chen (1996) has also noticed the potential of signaling action and mentioned in the discussion part of his seminal paper, researchers should study issues like market signal, strategic commitment, and bluffs in CD. Therefore, I consider my dissertation is answering these calls to build a theoretical foundation for the role of language in CD.

2.1.2 Multimarket Competition

Multimarket competition describes a situation where the same firms compete in more than one markets (e.g. geographic market or product market) (Karnani & Wernerfelt, 1985). Edward (1955) proposed the mutual forbearance hypothesis, which argues that firms that meet in multiple markets are hesitant to compete vigorously with each other because the cost of all-out wars may exceed the prospect for market gain. Multimarket contact (MMC), a measure to capture the extent of overlapped markets, indicates the level of mutual forbearance. The higher level of MMC, the higher possibility of tacit collusion (mutual forbearance). Therefore, a central theme of multimarket competition research is to study the relationship between MMC and mutual forbearance effects. In this section, I will review multimarket competition literature around this theme: the relationship between MMC and rivalry intensity and the boundary condition of this relationship (see Table 4).

MMC and rivalry intensity

Due to asymmetry of information, resources, and market conditions, firms need to

constantly take offensive and defensive actions in order to achieve advantage against each other. According to economic and ecological theories, firms with high levels of market overlap are fighting for similar resources under similar market conditions and thus these firms will compete more aggressively than those with fewer market overlaps (Aldrich, 1979; Hannan & Freeman, 1977; Porter, 1980; Scherer & Ross, 1990). However, multimarket competition scholars argue the opposite: the closest competitors may not be the most aggressive competitors. If a firm (A) encounters another firm (B) in multiple product or geographic markets (high level of MMC), they are likely to temper their aggressiveness because of the fear of multiple market retaliation (Baum & Korn, 1996). If a firm (A) encounters another firm (C) in a single or a few markets (low level of MMC), firm (A) is more likely to engage firm (C) as they compete with similar resources (Barnett, 1993) and there is no mutual forbearance. In general, the mutual forbearance hypothesis indicates that the higher level of MMC, the lower the level of rivalry intensity.

There are several assumptions behind the mutual forbearance hypothesis. Bernheim and Whinston (1990) point out that MMC cannot increase the benefits of cooperation if markets are identical, firms are identical, and returns to scale are constant. Moreover, two other conditions for mutual forbearance to take hold are oligopolistic settings and firm coordination across markets. First, firms in oligopolistic settings are more interdependent. They are more aware of each other's moves and more influenced by the moves. Only in such settings is it possible for firms to leverage the threat of multimarket retaliation as a way to reduce rivalry. In other words, firms need to recognize their extended interdependence in order to be threatened by MMC (Gimeno & Woo,

1999). Second, coordination across markets is the theoretical basis for the mutual forbearance effect (Baum & Korn, 1999; Golden & Ma, 2003; Yu et al., 2009). When attacked, firms need to be capable of retaliating at a desired market (e.g. a market where the potential loss is bigger for the attacker than for the focal firm). Those assumptions and conditions are generally taken-for-granted in multimarket competition research.

In earlier works, multimarket competition scholars have supported the mutual forbearance hypothesis by using performance as an indicator of interfirm rivalry (Evans & Kessides, 1994; Feinberg, 1985; Gimeno & Woo, 1996; Heggestad & Rhoades, 1978; Hughes & Oughton, 1993; Scott, 1982). Later, researchers have started to examine the effect of MMC on rivalry per se—studying actual firm-level competitive behaviors. Baum and Korn (1996) used market entry and market exit as indicators of rivalry intensity and found a negative relationship with MMC. Boeker and colleagues (1997) also found that firms with high MMC are less likely to exit markets. Young, Smith, Grimm, and Smith (2000) found that firms with high levels of MMC are less likely to initiate attacks, but are quicker to respond when attacked. They argue that when firms are attacked, those with high levels of MMC have more to lose by not deterring defections from forbearance than those with low levels of MMC. By extending multimarket competition into global setting, Yu and colleagues (2009) also confirmed the effect of MMC on rivalry reduction (MMC is negatively associated with competitive aggressiveness). Regarding action responses, Yu and Cannella (2007) found that firms with high levels of MMC are faster to respond when attacked, consistent with Young et al's study (2000).

While the traditional multimarket competition theory predicted a linear relationship between the level of MMC and rivalry intensity, some papers have identified a curvilinear relationship between them. In Baum and Korn's later work, they found an inverted-U shaped relationship between MMC and rivalry intensity (Baum & Korn, 1999). They argued that firms at first are motivated to increase the level of MMC in order to achieve the benefits of mutual forbearance, a level also called "mutual forbearance equilibrium", and then after the level are less motivated to initiate attacks because of the fear of multimarket retaliations/the benefits of mutual forbearance (Karnani & Wernerfelt, 1985). Haveman and Nonnemaker (2000) and Fuentelsaz and Gomez (2006) also found an inverted-U shaped relationship between MMC and firm market entries.

Contingencies of the mutual forbearance effect

Multimarket competition scholars are interested in a variety of moderators for the mutual forbearance hypothesis, including characteristics of the market, the firm, and the relationship between competing firms. For example, market concentration is one of the most widely studied contingencies. Research has shown that the mutual forbearance effect is stronger in more concentrated markets (Baum & Korn, 1996; Haveman & Nonnemaker, 2000; Jayachandran, Gimeno, & Varadarajan, 1999). The rationale is in line with the oligopolistic condition I noted earlier.

Besides market concentration, characteristics about resources similarity/dissimilarity also attracted attention from multimarket competition scholars. For example, Gimeno and Woo (1999) argue that the effect of MMC on rivalry deterrence is stronger when MMC takes place in markets with strong resource-sharing

opportunities because of the stronger incentive for tacit collusion. Similarly, Young and colleagues (2000) argue that resource similarity provides a common basis for mutual forbearance, so firms characterized by resource similarity do not need additional information provided by multimarket contacts in order to induce collusive behavior. They predicted that the effect of MMC on rivalry deterrence is greater when resources of the focal firm are more dissimilar with those of its rivals. Fuentelsaz and Gomez's (2006) findings also supported this argument. On the contrary, Jayachandran, Gimeno, and Varadarajan (1999) argue in a conceptual paper that firms with similar resources are more likely to recognize each other as significant competitors. Those firms are more familiar with each other's strategies and capabilities, and hold credible threats of retaliation for each other. Therefore, the effect of MMC on rivalry deterrence is stronger when resources of the focal firm are more similar with those of their rivals.

Firm-market level contingencies have also been well studied. For example, by separating the general effect of MMC and particular effect of reciprocal MMC (e.g. sphere of influence). Sphere of influence is characterized by market share or dependence asymmetries. Gimeno (1999) found that reciprocal MMC has stronger effect than non-reciprocal MMC on rivalry deterrence, that is, if two firms with MMC have reciprocal dominant markets, there are more opportunities for those firms to signal their own territory of interests or footholds in rival's territory of interest, as a way to facilitate coordination. Funentelsaz and Gomez (2006) also confirm the moderating effect of spheres of influence. In a global setting, Yu and colleagues (2009) found that government regulation (such as policies that constraining competition), cultural distance (between a

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multinational firm's home country and a given host country), and subsidiary ownership significantly attenuate the effect of MMC on rivalry intensity.

   Limitations of multimarket competition theory

   In sum, conventional multimarket competition theory predicts that firms with MMC tend to act less aggressively because of the fear of multimarket retaliation, but those firms tend to respond aggressively when they are attacked. Empirically, both Young and colleagues (2000) and Yu and Cannella (2007) have revealed a positive relationship between action response speed and MMC between attacker and responder. However, smith and Wilson's (1995) study show that the "do nothing" strategy is the most frequently observed strategy to respond to an attacker with MMC. They laid out four types of responding strategy: do nothing, defend (match attack at the responder's market), counterattack (match attack at the attacker's market), and total war (attack at more than one market), reflecting a continuum of rivalry intensity. According to them, the do nothing strategy "leads to an implicit market sharing equilibrium, where the two firms implicitly agree to share the market demand." Yet, this raises questions about how competitors can communicate with each other by do nothing response in order to reach the implicit market share equilibrium. In this dissertation, I consider word response, an alternative response strategy compared to action response and do nothing response, and argue that it has the potential to contribute to multimarket competition theory.

2.1.3 Summary

   During past two decades, CD has attracted interest from a significant number of scholars. Both action-response and multimarket competition studies have established

streams of research by focusing on interfirm rivalry per se—competitive behaviors. Meanwhile, CD scholars have tried to link this relatively new area of strategy research with other traditional organizational theories and studies. My dissertation is designed to further this attempt in order to enhance our understanding about how firms compete by focusing on a specific type of competitive behavior-word response.

One area of strategy research I want to link with CD is strategic leadership literature, which is mainly based on the upper echelon theory. I wonder how strategic leaders, such as CEOs, are associated with firm competitive behavior, particularly word responses. Next, I am going to review research on the upper echelon theory.

2.2 Upper Echelons (UE) Theory

2.2.1 The Role of Managers in UE Theory

The study of top managers and their effects on organizational outcomes is often called the UE perspective (Cannella & Hambrick, 2001). Hambrick and Mason (1984) first proposed this perspective in their seminal piece. In this view, the organization is a reflection of its top managers, characterized by their cognition, values, and perceptions (Carpenter, Geletkanycz, & Sanders, 2004; Hambrick & Mason, 1984). In other words, top managers can influence organizational strategy and performance because of their cognitive bias and preferences.

There are several key assumptions behind the UE theory. The first assumption is bounded rationality. Drawing from the behavioral theory (Cyert & March, 1963), UE assumes that managers are rational but only in a limited way. They are bounded by information, absorptive capability and cognitive structures, thus the decision making

process is influenced by their personal values and cognitive biases. The second assumption is the heterogeneity of managers. Managers are different, considering their psychological, cognitive, and demographic factors, thus, their responses to the same situation are different. The third assumption is based on the strategic choice literature, that is, top managers lead their organizations by making strategic choices (Cannella & Holcomb, 2005).

The theoretical basis of the UE theory is that managers do matter. Here, I list three major reasons why managers are important to organizational studies. First, organizational outcomes are not just environmentally determined. Child (1972) made a significant contribution in emphasizing the role of managers in decision making. He argued that top mangers had the discretion to make choices that can influence organizational performance. Thus, strategy research, without considering the role of top managers, is incomplete. Second, organization cannot "see" stimuli in the competitive environment, "interpret" it, and then "make choices" about it. It is the top manager (strategic leader) that deals with competitive events (Finkelstein et al., 2009). Top managers have abilities to "anticipate, envision, maintain flexibility, think strategically, and work with others to initiate changes that will create a viable future for the organization" and this ability is called strategic leadership (Ireland & Hitt, 1999). Third, the role of managers is important to competitive advantage. According to the resource-based view, top managers are key contributors to rents generation, because of valuable managerial skills and abilities (Castanias & Helfat, 1991). Barney (1991) argues that 'managers are important in this model (the resource-based view), for it is managers that

are able to understand and describe the economic performance potential of a firm's endowments. Without such managerial analyses sustained competitive advantage is not likely'. Makadok (2001) has also mentioned that managers are important to competitive advantage because they need to identify and manage resources better than competitors.

2.2.2 UE Theory vs. Agency Theory

Agency theory (Jensen & Meckling, 1976) and upper echelons theory (Hambrick & Mason, 1984) are dominating theories in studies of top mangers in strategic management (Cannella & Monroe, 1997). While agency theory is rooted in economics (Coase, 1937), upper echelons theory is rooted in sociology and psychology (Child, 1972). Each theory has inspired separate lines of literature on how corporate elites (top executives and directors) influence strategy (Jensen & Zajac, 2004). Although both theories emphasize the role of managers, the approaches are quite different. In agency theory, top managers are taken as agents of shareholders, in such a way decision making and risk bearing are separated and specialized (Fama & Jensen, 1983; Jensen & Meckling, 1976). They are treated as more a liability than a value creator. Managers are self-serving economic actors who need monitoring or incentives to keep them from opportunistic behavior. In UE theory, top managers are not overtly self-serving. Top managers are heterogeneous in psychological characteristics (e.g., knowledge, personality, and experience), and they are responsible on filtering and interpreting external environments, and then make strategic choices (Finkelstein et al., 2009). Therefore, their characteristics and capabilities are critical to the firm's action and performance. The two perspectives for top managers are complementary to some extent: agency theory is a position/role-

based argument and upper-echelons theory is demography-based argument (Jensen & Zajac, 2004).

2.2.3 Managerial Discretion

As Finkelstein, Hambrick, and Cannella (2009) pointed, the current UE research needs more studies on "when and how" managers matter, and not so much on "whether" managers matter. Hambrick and Finkelstein (1987) identified an important concept to study this boundary condition—managerial discretion, which is defined as the latitude of managerial action. They argue that how much managers matter is determined by three types of factors: environmental, organizational, and personal characteristics. I will discuss those sources of discretion in the following section but not limited to the Hambrick and Finkelstein's works.

The first source is individual conditions. Managers must be aware of how much discretion they have in order to exercise their influence, thus managerial attributes (e.g., experience, scanning and insight) are important determinants of discretion. In addition, managers who know how to sell their actions have more discretion because they can attribute good performance to their actions or choices and earn more discretion (Hambrick & Finkelstein, 1987). Moreover, Finkelstein and Peteraf (2007) argue that managers can choose to select activities that may have more influence on the organization (the authors consider this as the fourth source of discretion—activity). Empirically, there are only few studies that tested the individual condition (Finkelstein et al., 2009). The second source is organizational conditions, including inertial forces (such as organizational age, size and culture), resource accessibility and political conditions.

For example, mangers have less discretion in firms where a major non-manager owner exists (Hambrick & Finkelstein, 1995). The third source is environmental conditions. Market characteristics such as product diversity and capital intensity can affect managerial discretion (Hambrick & Finkelstein, 1987). Also, people tend to rely on decision maker's abilities to process information when there is turbulence/changes/crisis in the external environment (Galbraith, 1973; Haleblian & Finkelstein, 1993; Mintzberg, 1973).

2.2.4 Integration of UE and CD

Strategic leadership, a central force to strategy and competition, is an important antecedent of competitive moves. There are several studies that have examined the relationship between top manager characteristics and competitive responses (Chen et al., 2010; Ferrier, 2001; Hambrick et al., 1996; Lin & Shih, 2008; Marcel et al., 2011; Smith et al., 1992). For example, Smith et al (1991) argued that more experienced top managers tend to avoid risky actions and build their own cognitive models, while less experience top managers are more willing to take risky actions and learn new behaviors. They found that less experienced managers are more likely to respond and quicker to respond with action responses than more experienced managers.

TMT heterogeneity is one of the most studied managerial predictors for competition. The effects of TMT heterogeneity are mainly reflected in two arguments. On the one side, TMT heterogeneity represents broader scope of attention and mental models, thus the top management members can bring in more cognitive resources for decision making. On the other side, different mental models may hinder the information

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exchange among top management team members and thus reduce the efficiency of decision making. For example, in the airline industry, Hambrick, Cho, and Chen (1996) found that the more heterogeneous the team, the more likely of it to respond but slower at response. Ferrier (2001) found a positive relationship between TMT heterogeneity and attack complexity.

Chen et al (2010) furthered this line of studies and examined the interaction effect of TMT integration and hypercompetitive environment on action aggressiveness and firm performance. They found that the more cohesive the TMT, the quicker and more decisive responses could be made. Marcel, Barr, and Duhaime (2011) make an important contribution to link managerial cognition and competitive dynamics research. From a longitudinal study of the airline industry, they suggest that manager's cognitive frameworks of "strategic importance" are positively associated with the likelihood and speed of action responses. Moreover, the effect of managerial cognition on action is negatively moderated by TMT heterogeneity and positively moderated by TMT industry tenure.

2.2.5 Summary

In sum, although Hambrick and Mason's UE theory has a "formidable impact and far-reaching scope" in strategy research (Carpenter et al., 2004), there is still much we don't know about strategic leaders and their effects. For example, there are only few studies about CEO characteristic in CD. As Hambrick noted, "we must do much more research to get inside the black box that stands between executive characteristics and strategic outcomes." (Cannella & Hambrick, 2001, p39). Individual factors such as need

for power and tolerance for ambiguity can help explain why CEOs make such decisions. In this dissertation, I consider the lens of managerial language can help us understand how CEO observable characteristics are linked to firm-level strategic outcomes. In addition, Hambrick noted another big opportunity in UE is to integrate UE and agency theory. I think including both CEO tenure and CEO duality into my model is a move in that direction.

Besides integrating UE and CD to understand how CEOs influence competitive behavior, I am also interested in the communication mechanism among competitors. Two streams of signaling research in management can help explain the role of language in competition. In the next section, I will review signaling research.

2.3 Signaling Research

2.3.1 Two Streams of Signaling Research in Management

Signals have been defined broadly from different disciplines (Heil & Robertson, 1991). In general, there are two streams of signaling studies in the management field. One stream of research has built on Spence's (1973) signaling theory and applies it mainly to solve the information asymmetry problem between a firm and its stakeholders (see Connelly et al., 2010 for a review). The signal mentioned in this line of literature is more about deliberate communication of positive information in an effort to deliver a positive underlying attribute of the organization. For example, firm insiders know better about their firm quality than firm outsider (i.e., investors and customers), therefore, firms of high quality have more incentives to signal that quality than firm with low quality in order to differentiate themselves and achieve benefits (Kirmani & Rao, 2000). Signals

from this school are costly and hard to imitate. Correspondingly, for the traditional signaling theorist, language is not a signal because they are costless.

Another stream of signaling studies is about competitive signaling theory. It originates from Michael Porter (1980), who defined a market signal as "any action by a competitor that provides a direct or indirect indication of its intentions, motives, goals, or internal situation" (p.75). This definition includes both language and action as competitive signals. Compared to signaling theory, which is mainly focused on positive information and information asymmetry between a focal firm and stakeholders, competitive signaling theory is focused on competitive information and the influence on competitors. More importantly, a distinct difference between those two theories is the role of language: according to traditional signaling theory, language is not a signal because it is cheap, but according to Porter's view of competitive signal, language is a competitive signal because it carries important competitive information.

Next I will review those two theories and relevant literature.

2.3.2 Signaling Theory

Michael Spence's (1973) seminal paper proposed a job market signaling model, where education credentials can be a signal of a job applicant's capability for employers. The assumption for a signaling model is that when information asymmetry a credible signal can narrow the information gap. If the employer receives and accepts the signals, equilibrium is generated with other decision-making factors such as the employer's belief about hiring. Economists argue that the market is expected to be more efficient after signaling.

Management scholars have applied signaling theory widely in organizational research. As Spence (2002) noted, a fundamental concern of signaling theory is to reduce information asymmetry between two parties. It is assumed that the party with more information wants to communicate with the party with less information. Thus, the central theme of signaling studies in management is about the signaling effect: managers (insiders of the organization) communicate unobservable organizational attributes with outside stakeholders (e.g. investors and consumers) in order to gain legitimacy or positive reputations (Certo, 2003; Deephouse, 2000; Zhang & Wiersema, 2009). For example, entrepreneurship studies have shown that start-up or IPO firms send out signals to potential investors in order show the "true value" of the firm, and this results in improved access to capital or stock price performance (Certo, 2003; Lester, Certo, Dalton, Dalton, & Cannella, 2006; Zimmerman, 2008). Signals are observable organizational characteristics that are costly and hard to copy, such as ownership structure, TMT heterogeneity, and board prestige that demonstrate that the firms are economically rational investments and are likely to perform well in the future. Signal receivers in management studies are mainly existing shareholders and future investors.

An important factor that may influence the signaling effect is the signaler's credibility (also called signal honesty)—the extent to which the signaler actually has the signaled underlying attribute (Connelly et al., 2010). Inaccurate signals (also called signal misfit) will influence the receiver's perception of the signaler and the effectiveness of the future signals sent from the signaler. In the management field, signaling theory and reputation research are closely related. As Fombrun and Shanley (1990: 234) noted,

"reputations (are) the outcomes of a competitive process in which firms signal their key characteristics to constituents to maximize their social status". In addition, while firms form reputation through evaluation signals (Weigelt & Camerer, 1988), reputation is also a kind of signal from firms (Fombrun & Shanley, 1990). A positive reputation signals stakeholders about the attractiveness and reliabilities of the firm (Deephouse, 2000; Fombrun & Shanley, 1990; Weigelt & Camerer, 1988).

Language in signaling theory

Compare to signals, an indirect and costly communication, language in signaling theory is another kind of communication—direct and costless (Krishna & Morgan, 2001). Based on Spence's hiring process example, cheap talk theorists argue that the employer can just ask the job applicant about their capabilities and then make a choice either based on the information or not, depending whether they believe the response or not (Crawford & Sobel, 1982; Farrell & Rabin, 1996). The information-asymmetry problem can be solved by cheap talk without involving costly signal (i.e., education).

Crawford and Sobel (1982) first proposed the cheap talk model, "in which a better-informed Sender (S) sends a possibly noisy signal to a Receiver (R), who then takes an action that determines the welfare of both." They argue how much information to reveal is determined by the preference similarity between S and R. If their preferences are aligned, sharing information can bring both parties good pay-offs, then there is no incentive for S to lie. This simple model just considers one round of cheap talk (communication), so if the preferences of S and R are not aligned, there is no cost for lying. Because lies of high quality can get a better pay-offs, there is no incentive to tell

the truth. In that case, there is no valuable information from the sender and the receivers always ignore the sender's messages. Therefore, cheap talk theory leads to two equilibriums: informative equilibrium and babble equilibrium (equilibrium without useful information). The main contribution of this work is that it indicates direct communication can also play a role for agents with similar interests or goals, although talk is cheap.

Empirically, the role of language has not been totally ignored by scholars who apply Spence's signaling theory. For example, some accounting scholars have treated voluntary disclosures as signals. The authors claim that the signaling cost of disclosure could be the penalty cost for inaccurate disclosure (Hughes, 1986) or the loss of releasing private information to competitors (Bhattacharya & Ritter, 1983; Darrough & Stoughton, 1990). For instance, Hughes (1986) showed that by aligning voluntary disclosure with other credible behaviors (e.g. verification from an investment banker or a contingent contract with penalty items), "cheap talk" could be an alternative way to reduce information asymmetry between the focal firm and outside stakeholders.

2.3.3 Competitive Signaling Theory

From Porter's (1980) perspective, competitive signals are defined as any moves that carry competitor's information, including both words and actions. Marketing scholars often apply Porter's approach to signaling theory and mainly focus on the competitive implications of signals (Heil & Robertson, 1991; Moore, 1990). Competitive signaling theory argues that signals are important in oligopolistic settings because competitors' information contributes to the baseline assumption of a focal firm's decision making. Managers are motivated to send out competitive signals in order to improve a

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firm's market position (Porter, 1980).

Competitive signals can be in different forms in terms of signal content, including prior announcements of moves, announcements of results or actions after the fact, public discussions of the industry by competitors, and competitor's discussions and explanations of their own moves (Porter, 1980). Those competitive signals can have different functions, such as preempting, threatening, tests of competitor sentiments, or communicating pleasure/displeasure with competitors.

Similar to the notion of signaler's credibility in signaling theory, Porter also mentioned that competitive signals could be true commitments or bluffs, which may trigger competitors to expend resources on an undesired position or defend against a nonexistent threat. Therefore, reading/decoding competitive signals is a capability competitors need to master based on ongoing comparison between known attributes of the sender and the sender's competitive behaviors. Although collecting and interpreting competitive signals may require significant attention from managers, managers cannot ignore competitive signals because ignoring signal information is the same as ignoring competitors altogether.

Language in competitive signaling theory

Verbal statements that reveal competitor's intentions and attitude could be an alternative way of communication between competitors other than competitive actions and such words can help explain competitor's behavior (Heil & Robertson, 1991; Moore, 1990). For example, "an announcement can be a way to communicate a firm's commitment to carrying out a threat for the purpose of causing a competitor to either

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back down from or tone down a move or to not initiate it in the first place" (Porter, 1980, p79). Those threatening signals may or may not be carried out because the extent of commitment carried with the message varies. The signal receiver's perceived strength of the sender's commitment and signal sender's reputations are key factors for a competitive signal to achieve its rivalry deterring effect (Heil & Robertson, 1991).

Eliashberg and Robertson (1988) have taken new product preannouncing behavior as a competitive signal, "a formal, deliberate communications before a firm actually undertakes a particular market action". They found that market dominance, company size, and the competitiveness of the environment are negatively associated with preannouncing behaviors, while customer switching-costs are positively associated with preannouncing behaviors. The preannouncing behavior can help firms gain some benefits as the pioneering firm in the industry, such as early positioning of products in most profitable segments, developing favorable opinions from stakeholders, and creating entry barriers for potential competitors.

Heil and Robertson's (1991) study further this line of research by referring competitive signals to "announcements or previews of potential actions intended to convey information or to gain information from competitors." The assumption of competitive signaling theory is that responding firms use competitive signals to interpret the motivation of attack and then make response decisions. For example, airline firms use price reduction in an attacker's hub area to signal: "I am not happy about your move." The reason why firms engage in such competitive signaling behavior is that the benefits of the competitive signal exceed the potential costs. Two major benefits of competitive

signals are preemption (to have the first mover advantage) and development of competitive norms of conduct (to coordinate with other competitors in the industry). The former benefit largely depends on competitive signal sender's capability to build entry barriers and commitment to the signal, while the latter benefit largely depends on the competitive signal sender's market leadership and its ability to enforce sanctions.

Moreover, in a multi-period pricing simulation experiment, Moore (1992) found that competitive messages are more likely to trigger competitive responses in the earlier stage of the simulation, while cooperative messages have more significant effect on cooperative behaviors in the later stage of the simulation. Robertson, Eliashberg, and Rymon (1995) found that competitive signal receivers are more likely to respond to hostile signals or signals with higher levels of commitment, and that they will respond more aggressively towards more credible signals.

2.3.4 Summary

Signaling theory has gained momentum in the management field, including strategic management and entrepreneurship. Competitive signaling theory has also gained increasing attention from marketing scholars. However, the two closely related theories treat the role of language in competition quite differently. On the one hand, according to signaling theory, language between competitors, who have inherently conflicting interests, is basically not credible communication and cannot reduce information asymmetry between the two parties. On the other hand, according to competitive signaling theory, language has a significant role in competition as a way to improve or defend market position. In addition, both theories have emphasized the importance of the signaler's

reputation. The effect of language in reducing information asymmetry or to improve

market position is influenced by firm reputation.

CHAPTER 3

HYPOTHESIS DEVELOPMENT

In this chapter, I propose nine hypotheses to reveal the underlying mechanisms behind word responses based on the revised action-response perspective as shown in Figure 2 (Revised action-response perspective). The nine hypotheses are aimed to answer two key questions: when firms (managers) are motivated to respond verbally and what kind of firms (managers) are more likely to use word response. Figure 1 (Theoretical model of word response) depicts the theoretical framework for this dissertation.

3.1 Under What Situations are Responders Motivated to Use Word Responses

Based on Smith et al's (1992) perspective of action and response, I explore four conditions of word responses based on characteristics of the action, the market, and the actor: action type (strategic vs. tactical), market dependence of responder, multimarket contact of the responder in the market, and competitive aggressiveness of the actor.

3.1.1 Action Type

An important distinction of competitive actions is whether they are strategic or tactical moves (Dutton & Jackson, 1987; Porter, 1980, 1985). Tactical actions include price changes, advertising campaigns, and incremental changes to products or services, while strategic actions include important new products or services, major facilities expansions, mergers and acquisitions, and strategic alliances. Compared to tactical actions, strategic actions involve more significant commitments of resources, carry information that is more difficult to interpret, and are more difficult to implement and reverse (Chen & Miller, 1994; Chen et al., 1992; Hambrick et al., 1996; Hsieh, Tsai, & Chen, 2014).

Competitive dynamics (CD) scholars argue that responders are less likely to respond to strategic actions because managers need more time to figure out what is going on (to remove uncertainty) and more implementation efforts to respond. In contrast, targets are more likely to respond to tactical actions because managers are more familiar with routine-based moves and it is easier to implement tactical moves in response. Empirically, previous studies found that targets are less likely to respond to strategic actions with action responses, and targets are slower to respond to strategic actions with action responses, compared to tactical actions (Chen et al., 1992; Smith & Grimm, 1991).

However, from the Austrian school of economics, strategic actions (e.g. new product introductions and strategic alliances) may represent the possibility of first-mover advantage. The slower the response, the higher possibility the responder to be left behind and experience eroded market share caused by the early movers. As Miller and Chen (1994) noted, strategic actions are often motivated by expanding markets (compared to shrinking markets) and provide some basis for optimism. From this sense, strategic actions could motivate managers to respond quickly in order to gain early-mover advantages or sustain current advantage. On the other side, managers also need to consider the risks associated with responding to strategic actions, such as the uncertain effects of strategic actions on the market and the possibility that the interests/preferences of powerful stakeholders will be harmed. In general, when attacked by a strategic action, responders face threats of possible market share erosion and missed market opportunity (if they decide not to respond) or possible action failure (if they decide to respond with an action).

As a matter of fact, responders are not limited to the options of do nothing or an action response but they also have the option of word response. As I defined them earlier, word responses are announcements or previews of potential market actions. They are competitive signals that carry some commitment and uncertainty. As Porter (1980: 101) noted, "If the firm can convince its rivals that it is committed to a strategic move it is making or plans to make, it increases the chances that rivals will resign themselves to the new position and not expend the resources to retaliate or try to cause the firm to back down. Thus commitment can deter retaliation." Take a new market entry for example, the action initiator may back down or tone down the move if the firm encounters a word response from a dominant incumbent firm that indicates a possible price-reduction in the market.

The uncertainty feature means that the intention carried in the word response may or may not be carried out depending upon the attacker's reaction or the responder's strategic commitment. As many scholars point out, strategic actions often involve with long-term horizons and require significant and continuing commitment (Connelly et al., 2010; Hsieh et al., 2014; Miller & Chen, 1996). In contrast, word responses allow more flexibility for managers to respond to strategic actions because word responses require limited resource allocation at the first place and managers may decide their continued commitment based on the reaction to the word response. By just expressing the intention for a strategic response, managers are capable of gaining more information from the action initiator or stakeholders. Word responses can be used to test the waters for the responder.

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Therefore, for strategic actions, word responses are better than non-response because word responses have at least the possibility of deterring rivalry or gaining more information about the strategic move, and word responses have some potential improvements over action responses because of their reversibility and implementation quickness, thus reducing the risk of failure. Here, I predict that the action type is an important antecedent of word responses. Specifically, strategic actions are more likely to lead to word responses, as formally stated below.

Hypothesis 1:   *Strategic actions, relative to tactical actions, are more likely to provoke word responses.*

3.1.2 Market Dependence of Responder

A responder's market dependence captures the extent to which the responding firm relies on the market(s) affected by an action (Chen & MacMillan, 1992). Market dependence was found to be an important determinant of action responses in the CD literature (Chen & Miller, 1994; Chen et al., 1992; Livengood & Reger, 2010; MacMillan et al., 1985). Evidence suggests that the more dependent the attacked firm is on the market under attack, the more likely the attacked rival will respond and match the initial action. The theoretical explanations arise from different perspectives. By adopting a game theory approach, Chen and MacMillan (1992) argued that defenders are balancing the payoff for not defending against the payoff for doing so. The defenders' response decisions are very sensitive to the revenues and profits for the attacked market relative to the defenders' total markets. The more an attacker's move affects the attacked firm's key markets, the more losses the defender suffers, and the more likelihood of action response. In contrast, Livengood and Reger (2010) used organizational identity theory to argue that some market areas are considered more central and enduring than others and firms have

more psychological dependence on those market areas (such areas are called *identity domain*). Thus, when attacked in their identity domains, firms are more motivated to respond with action responses because of psychological and emotional ties.

While firms are motivated to respond to signal the attacker to back off when important markets are attacked, they may not need to respond with action response at the first place. From a game theory approach, an action response in a highly dependent market setting is often costly and risky. For example, the payoff to a competitive war that engulfs key markets may not compensate the cost. Although an action response may gain some market share back from the attacker, it may also escalate the competition between the attacker and the responder. If the cost of an action response is expected to exceed the benefits, responders may turn to other alternatives such as word responses. Because the strategic intention itself does not harm the rival in a direct way, word responses are less likely to stimulate a competitive war between two rivals.

From a social-cognitive perspective (e.g. identity-domain theory), when an attack occurs in a highly dependent market for the responder, managers are motivated to respond quickly to demonstrate their willingness to defend their important market (Livengood & Reger, 2010). Compared to an action response, a word response is quicker to launch and may attract more attention from competitors and stakeholders because of the salience of the public intention carried in its statements. Managers may respond with an action response later to show more toughness depending on the responder's capacity to implement the intended action and the attacker's reaction.

In sum, both game theory and the identity-domain perspective help explain why word response can be a good strategic choice for the responder, compared to non-

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response and an action response. It is possible that word response may deter rivalry at the first place, as a substitute of action response[2]. Take, for example, the case of McDonald's and Pizza Hut. After McDonald's introduced McPizza in selected restaurants to test the market in 1989, Pizza Hut immediately threatened "every place you see a McDonald's pizza, you're going to see a war." (Shapiro, 1989). In fact, due to Pizza Hut's aggressive word response, McDonald's subsequently halted the introduction. Following the logic above, I predict the market dependence of the responder as another important antecedent of word responses.

Hypothesis 2:   *The responder's dependence on the market under attack will be positively associated with the use of word responses.*

3.1.3 Multimarket Contact

Multimarket contact (MMC) describes a situation wherein two or more firms compete with each other in more than one product or geographic market (Yu & Cannella, 2013). With the existence of MMC between two firms, if one firm initiates an attack, the other firm can respond not only in the market being challenged, but also in other markets where both firms are present (Karnani & Wernerfelt, 1985). As a result, Edwards (1955) introduced the notion of "mutual forbearance" and argued that firms competing against each other in multiple markets will hesitate to compete aggressively because the cost of warfare across multiple markets is too high. Schelling (1960) noted later that what deters multimarket rivalry is not the aggressive retaliation per se after an attack but rather the expectation that such retaliation will occur. MMC helps competitors become familiar

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[2] Word response may deter rivalry in some situations, as a substitute of action response. In some situations, word response may need a following action response to deter rivalry, as a complement of action response. Exploration of those situations is beyond the scope of this study.

with each other, realize the common benefits of mutual forbearance, and implicitly

coordinate their expectations and behavior (Jayachandran et al., 1999).

Sometimes, however, competitors do not follow the norm of forbearance even in

the presence of MMC. Several CD scholars have provided theoretical explanations about

how a firm might respond when a competitor with MMC challenges it (Chen, 1996;

Young et al., 2000; Yu & Cannella, 2007). They argue that under this situation, the attack

is often perceived as a betrayal to the expectation of mutual forbearance and the

responder has more assets at risk and greater incentive to enforce the norm of forbearance

by sharp retaliation. The quicker the response, the stronger signal of toughness sent out to

the attacker. Based on this argument, both Young and colleagues' (2000) and Yu and

Cannella (2007) found a positive relationship between action response speed and MMC

between attacker and responder.

However, on the other side, smith and Wilson's (1995) study showed that no

action response is the most frequently observed response to an attacker with MMC,

compared to other action response strategies such as defend, counterattack, and total war.

They argued that the "do nothing" strategy (i.e., no action response) "leads to an implicit

market-sharing equilibrium, where the two firms implicitly agree to share the market

demand." Yet, this raises questions about how competitors can communicate with each

other by no action response in order to reach the implicit market share equilibrium.

I suggest that the word response may be an omitted option of the defending

strategy under MMC. Compared to action responses, word responses are quicker and they

can also carry some commitment to retaliation. Word responses can perform the function

of communicating expectations among competitors, the underlying mechanism of mutual

forbearance noted by Schelling (1960). Further, the quickness and public exposure of a word response can express a strong willingness to defend a market position.

Additionally, a competitive war across multiple markets is very costly. Different from an action response, a word response only warns the initiating rival without causing direct harm and escalating the aggression. A pre-announcement is therefore less risky and can also indirectly inform the rival that the attack "crosses the line". In this way, the responder can put forth a response, but one that reduces the likelihood that the two firms will be drawn into a costly multimarket war.

Therefore, here, I predict multimarket contact as an important antecedent of the likelihood of word responses. It is highly possible that smith and Wilson (1995) included the word response strategy into the "do nothing" category, just like many other CD studies.

Hypothesis 3:   The degree of multimarket contact of the responder in the market will be positively associated with the use of word responses.

3.1.4 Competitive Aggressiveness

Competitive aggressiveness refers to the extent to which a firm defends its market position with actions. The concept of competitive aggressiveness is rooted in Schumpeter's description about *competitiveness*—the capacity to carry out a range of competitive actions in order to maintain an advantage (Ferrier et al., 1999). Two important dimensions of competitive aggressiveness are *action volume* and *action complexity* (Yu et al., 2009). Action volume captures the total number of competitive actions carried out in a given time period, while action complexity captures the range of action types carried out in a given time period. Research has shown that a firm that is aggressive in carrying out more and a wider range of competitive actions than rivals will

exploit more opportunities and close off more potential for rivals to retaliate (D'Aveni, 1994; Ferrier, 2001). Because there are fewer action responses from rivals, the aggressive firm can maintain its lead ahead of others. Empirically, CD scholars have found that competitive aggressiveness is positively related to firm performance (Ferrier, 2001; Ferrier et al., 1999; Young et al., 1996).

However, there are few studies that directly test the relationship between competitive aggressiveness and action responses, although the argument clearly implies a negative relationship between them. Moreover, we do not know how competitive propensity to take actions will influence the responder's motivation to use word responses. By adopting competitive signaling theory, I argue that word responses can deter rivalry by expressing strategic intention and communicating commitment on the part of the responder. The reputation for being an "aggressive" competitor indicates both a strong willingness and capability for a head-to-head competition (Clark & Montgomery, 1998). Such an actor will be less likely to halt an attack after receiving a signal from a responder. Makadok (2010) concluded that firms with superior capabilities tend to ignore mechanism of a rivalry restraint like MMC. Instead of interpreting word responses as an attempt to deter rivalry, there is good possibility that an aggressive attacker may interpret a word response as an aggressive move (not a defensive move) because of the publicity of word response and then initiate more attacks. Put simply, managers are less motivated to respond with words to an aggressive actor because responders know word responses are unlikely to be effective.

Therefore, I predict the competitive aggressiveness of the actor is an important antecedent of the likelihood of word response. Managers are less motivated to use word responses to deter rivalry from aggressive competitors.

Hypothesis 4: *The competitive aggressiveness of the actor will be negatively associated with the use of word responses.*

3.2 What Kinds of Responders are More Likely to Use Word Responses?

Besides characteristics of the action, the market, and the actor, I explore three characteristics of the responder that can help explain the use of word responses: firm reputation for stakeholders, CEO tenure, and CEO duality. Responders with good reputations, long CEO tenures, and CEO duality are more likely to adopt word responses. I also suggest the moderating effects of CEO tenure and CEO duality on relationship between situational characteristics (e.g., characteristics of the action, the market, and the actor) and word responses.

3.2.1 Firm Reputation Among Stakeholders

Different from what I mentioned about the reputation as an aggressive competitor (i.e., competitive reputation), firm reputation in this section refers to "stakeholders' perceptions about an organization's ability to create value relative to competitors" (Rindova et al., 2005). Rooted in signaling theory, firm reputation is formed on the basis of past behaviors and it can represent a public signal of the firm's "true" attributes such as product quality, strategic posture, and institutional conformity (Fombrun & Shanley, 1990). Stakeholders rely on firm reputations to make investment and purchase decisions, so a favorable reputation can contribute to stakeholder support. Firm reputation has been well recognized as an important source of competitive advantage (Basdeo et al., 2006; Fombrun & Shanley, 1990; Hall, 1992), and many studies have found a positive

relationship between firm reputation and firm performance (Deephouse, 2000; Fombrun & Shanley, 1990; Roberts & Dowling, 2002).

However, there are only a few studies that try to associate firm reputation among stakeholders with competitive actions. One exception is Basdeo and colleagues's (2006) study on the formulation of firm reputation. Drawing on signaling theory, they argue that firm actions and competitors' actions are determinants of firm reputation. The more actions a focal firm takes, the more information is available for stakeholders to reduce perceived uncertainty, thus the more positive the impression formed by stakeholders. Similarly, the authors argue that more complex actions provide more information and can signal strategic flexibility, top management team experience, or the capacity to learn and respond to diverse opportunities. Among rivals, the more actions taken by a rival, the more the attacked firm's attention is diverted from stakeholders and the more potential cost associated with a focal firm's action (e.g., retaliation cost), thus the less likely that the firm will have a positive impression formed by the stakeholder.

To predict the effect of firm reputation on competitive responses, I suggest that firms with favorable reputations are more likely to leverage the good impressions of stakeholders because the responders know their words are relatively more powerful and credible to the actor. Competitors will perceive higher commitment carried with the word response if the responder has a high firm reputation because the public visibility/prominence of those firms is higher. In other words, there is more potential for a word response to successfully substitute for an action response if firm reputation is high.

Besides communicating commitment with competitors, word responses can help build firm reputation, which further motivates responders to use word responses. Rindova

and colleagues (2005) have suggested two dimensions of firm reputation—stakeholder's perceptions about the firm's quality and organizational prominence. On the one hand, word responses provide more information about the firm's next move than non-response, thus enhance reputation by reducing uncertainty for the stakeholder. On the other hand, the public nature of a word response can increase the prominence dimension of firm reputation. Because mass media tend to cite and quote top executives' statements about future actions, it is very possible that a word response attracts more public attention than an action response, as the awareness of action responses may be limited to affected competitors.

Although the strategic intent in a word response may or may not be lead to action responses, statements of unfulfilled intentions may not influence stakeholder's support for two reasons. First, the intention statement often comes with an endnote that explicitly claims that the firm has no obligation to stick to the forward-looking statement. Public observers are aware that there can be multiple reasons for an unrealized intention statement, and these are not limited to intentional bluffs. Second, firm reputation represents accumulated expectations from stakeholders with inertia attached (Rindova & Fombrun, 1999). The inertia means that a firm may be able to continue to gain stakeholder support even when its strategy is no longer viable. Therefore, responders do not need to bind their word responses tightly to intended action responses.

Here, I predict that the responder's reputation among stakeholders is an important antecedent of the likelihood of a word response.

Hypothesis 5: *Responder reputation will be positively associated with the use of word responses.*

3.2.2 CEO Tenure

CEO tenure has been proposed as a key influence on strategic choices (Hambrick, 1984). Hambrick and Fukutomi (1991) suggested five seasons of a CEO's tenure in the position—response to mandate, experimentation, selection of an enduring theme, convergence, and dysfunction. Each stage represents a distinct pattern of CEO attention and behavior. The authors assume that CEO decision-making is reflected by managerial schemata and repertoires (i.e., CEO paradigms) and are importantly influenced by a set of interrelated forces such as prior organizational problems and political pressures from the board of directors. Because the strength of those forces varies across different stages of CEO tenure, CEO strategic choices are also characterized by different temporal patterns. For example, at the beginning of their tenure, CEOs experience stronger pressure to reveal what changes are expected to happen, so the CEO's actions are largely a reflection of the going-in-mandate. After gaining some success and establishing a political foothold, CEOs can have more flexibility about their strategic choices. In the later stages, CEOs are relatively more committed to their paradigms, make fewer changes, and have more power in the organization. This study sets the foundation for many later works on CEO tenure because it captures the dynamic implications of CEO tenure (Barker & Mueller, 2002; Henderson, Miller, & Hambrick, 2006; Shen, 2003; Simsek, 2007; Wu, Levitas, & Priem, 2005).

However, CEO tenure has received limited attention in competitive dynamics settings. As an exception, Smith and colleagues' (1991) study argued that more-experienced managers tend to avoid risky actions and rely on their existing cognitive models, while less-experienced managers are more likely to engage in novel and risky

actions, respond faster to competitive attacks, and are less likely to imitate the actions of others. Put simply, less experienced managers take more risks and are more aggressive than more experienced managers.

Based on Hambrick and Fukutomi's (1991) study and Smith et al's (1991) study, I predict that CEO tenure is also an important antecedent of word responses. On the one hand, upper-echelons scholars argue that more experienced CEOs are better at leveraging existing knowledge and resources to exploit opportunities (Hambrick & Fukutomi, 1991; Miller, 1991). Compared to action responses, word responses are potentially more effective at exploiting firm-level intangible assets such as reputation as a credible defender and firm reputation among stakeholders. Less-experienced CEOs may not have accumulated enough reputational strength to leverage (due to CEO turnover) and are less able to exploit the opportunity to use words instead of actions. Long-tenured CEOs learn as their tenures progress, and are thereby more familiar with competitive interactions with competitors, including verbal communications. Thus, long-tenured CEOs are more likely to take advantage of word responses to test the waters or to threaten rivals before they decide to respond with actual actions.

On the other hand long-tenured CEOs tend to be more committed to their paradigms and often talk in public to show their wisdom (Hambrick & Fukutomi, 1990). As Smith and colleagues (1991) argued, long-tenured CEOs are more risk averse than short-tenured CEOs. Compared to action responses, word responses are less aggressive and do not harm the attacker. Several studies found that long-tenured CEOs are more likely to pursue Miles and Snow's (1978) "defender" strategy, as opposed to the "prospector" strategy. For example, Barker and Mueller's (2002) study showed that CEO

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tenure was negatively associated with R&D spending. The longer CEOs stay in their positions, the more strategic emphasis is placed on stability (Finkelstein et al., 2009) and the less aggressive they become. When attacked, the responder CEO may face a dilemma of maintaining stability with key stakeholders and competitors and his/her unwillingness to make strategic change. A word response can send out a competitive signal of warning to competitors in order to deter rivalry, and at the same time send out a signal to key stakeholders indicating that the CEO is capable of handling challenges. The uncertainty of a word response allows the CEO flexibility with respect to enacting the intended strategic change.

Here, I hypothesize:

Hypothesis 6:   Responder CEO tenure will be positively associated with the use of word responses.

3.2.3 Moderating Effects of CEO Tenure

Besides the main effect of CEO tenure on word response, I predict that CEO tenure can influence the relationship between action type/MMC/market dependence and the likelihood of a word response.

Upper-echelons research has suggested that long-tenured CEOs are more reluctant to initiate strategic change. Similarly, I argue that the long-tenured CEOs are less motivated to respond with action responses because strategic actions are associated with more uncertainty and changes than tactical actions. Compared to action responses, word responses can help test waters or deter rivalry, while reducing the risk of action failure. Therefore, long-tenured CEOs are more likely to use word response, an alternative competitive response, when the initiating action is a strategic action rather than a tactical

action. Put differently, CEO tenure will moderate the relationship between strategic actions and word responses such that the relationship will be strengthened by CEO tenure.

Research has also shown that long-tenured CEOs are less likely to engage in risk-taking (Miller & Shamsie, 2001; Smith & Grimm, 1991). When an attack occurs in an important market or the attack initiator has a high level of MMC with the responding firm, the responder does not want to risk provoking all-out war in an important market or multiple markets. Compared to an action response, a word response is less aggressive and less risky. Therefore, I suggest that longer tenured CEOs are more likely to use word responses when the market dependence of the responder is high or the level of MMC of the responder in the market is high.

Hypothesis 7a: *Responder CEO tenure will positively moderate the relationship between the action type (strategic action vs. tactical action) and the likelihood of word responses.*

Hypothesis 7b: *Responder CEO tenure will positively moderate the relationship between multimarket contact (of the responder in the market) and the likelihood of word responses.*

Hypothesis 7c: *Responder CEO tenure will positively moderate the relationship between market dependence and the likelihood of word responses.*

3.2.4 CEO Duality

CEO duality is another well-studied construct in upper-echelons research and has been widely discussed in corporate governance practice (Krause et al., 2014). CEO duality occurs when a CEO also serves as the board chairman. There is some controversy in the literature regarding the effect of CEO duality on firm performance. According to agency theory, CEO duality will promote CEO entrenchment by reducing the effectiveness of board monitoring, and thus may be negatively related with firm performance. In contrast, according to organizational theory, CEO duality represents

strong and unambiguous leadership and thus may be positively related with firm

performance (Daily & Dalton, 1997; Finkelstein & D'Aveni, 1994; Sanders & Carpenter,

1998). Although there is no clear conclusion about the relationship between CEO duality

and firm performance, it is generally agreed that CEO duality indicates more CEO power

(Krause et al., 2014). Scholars also suggest that CEO duality might have an effect on

risk-avoidance because more powerful CEOs are able to pursue less risky strategies in

accordance with their own risk preferences. For example, Ellstrand and colleagues (2002)

showed that CEOs with dual status tended to favor international initiatives with more

certain outcomes, presumably in order to protect their executive positions. Diversification

strategy is also an avenue to help a CEO reduce the exposure to risk. For example,

Castañer & Kavadis (2013) found that CEO duality is positively associated with a

financial diversification strategy because diversification can reduce investment risk for

the CEO.

However, there are few studies that have tried to integrate CEO duality, as a

corporate governance characteristic, with competitive dynamics. Considering the power

associated with CEO duality, CEOs with more power will have more discretion,

including more discretion to speak in public and reveal their firms' intentions for the next

move. Considering the propensity toward risk aversion, I argue that CEOs with dual

status are more likely to choose word responses over action responses when the firm is

challenged by an attack because word responses are less risky and more flexible, and dual

CEOs have stronger standing with their boards and can resist governance pressures for a

more action-oriented response.

Therefore, here, I predict CEO duality is an important antecedent of word responses.

Hypothesis 8:   *Responders with CEOs who are also board chairs will be more likely to use word responses.*

3.2.5 Moderating Effects of CEO Duality

Besides the main effect of CEO duality on the likelihood of word response, I also predict that the CEO duality can moderate the relationships between the action type/MMC/market dependence of the responder and the likelihood of word response.

Similar to CEO tenure, because dual CEOs are more risk averse, they are more likely to use word responses when market dependence is high, when MMC is high, or when the initiating action is strategic. Moreover, because dual CEOs are more powerful than non-dual CEOs, they enjoy higher discretion in making strategic choices. Thus, dual CEOs have more opportunity and capability to speak in pubic when it is necessary, especially in situations of strategic attack, attack from a multimarket player, or attack in highly important market. In other words, the responder's motivation to use word responses under those situations will be stronger if the CEO also carries the title of board chair.

Hypothesis 9a: *Responder CEO duality will positively moderate the relationship between the action type (strategic action vs. tactical action) and the likelihood of word responses.*

Hypothesis 9b: *Responder CEO duality will positively moderate the relationship between multimarket contact (of the responder in the market) and the likelihood of word responses.*

Hypothesis 9c: *Responder CEO duality will positively moderate the relationship between market dependence and the likelihood of word responses.*

3.3 Summary

In this chapter, building on the action-response perspective and competitive signaling theory, and incorporating literatures on firm reputation, upper echelons, and corporate governance, I investigate how characteristics of the action, the market, the actor, and the responder influence the likelihood of a word response. Accordingly, nine hypotheses are suggested by using antecedents like action type (strategic action vs. tactical action), market dependence of the responder (market attribute), MMC of the responder in the market (market attribute), competitive aggressiveness of the actor (actor attribute), firm reputation of the responder, responder CEO tenure, and responder CEO duality. My arguments are also based on a behavioral approach of strategy, that is, the strategic choices are influenced by executive's cognition, emotion, words, and actions. When attacked, executives of the responder are the decision makers who need to consider the relative costs and benefits for the firm, the competitive implications, the level of stakeholder support, and the CEO's self-interests. By exploring the underlying mechanism behind word responses, this theoretical framework aims to further our understanding about the role of language in competitive interactions.

In the next section, methodology, I will discuss the sample setting, variable measurement, data collection, study design, and statistical analysis for the tests of the proposed hypotheses regarding word responses.

CHAPTER 4

RESEARCH METHODOLOGY

In this chapter, I describe the methodology used to test the hypotheses presented in Chapter 3 (as shown in Figure 1). This chapter consists of four sections: 1) sample selection describes the sample industry and the sample firms; 2) overall research procedure, including data collection and identification of competitive actions and word actions; 3) measurement of major variables; and 4) an overview of the statistical analyses.

4.1 Sample Selection

4.1.1 Sample Industry

I choose the consumer electronics (CE) industry as the empirical setting for hypothesis testing based on the following considerations. First, there is high degree of interdependence among the large players in the CE industry. As I discussed in Chapter 2, an essential context for studies on actions-responses and multimarket competition is oligopolistic settings. Firms in such setting are more likely to be aware of rivals' moves, influenced by the moves and motivated to respond to the moves. Because of the high interdependence, when making decisions about actions and responses, managers need to consider how competitors might respond to the actions they are contemplating. Second, the CE industry is well known for intense competitive interactions. As Chen (1988) and Yu (2003) noted, it is desirable to limit an action-response study to a highly competitive environment where many competitive events can be observed and firms need to be responsive to each other. Third, there is rich information about competitive moves in the CE industry. Information regarding competitive actions/responses and word actions/responses are often available in form of public statements, and spread by media

such as industry journals, mass media outlets, press releases, and earnings conference calls. Thus, it would be possible for researchers to rely solely on published information to trace competitive moves and interactions. Fourth and important for my study, the CE industry is considered to be a high-discretion industry (Finkelstein & Hambrick, 1990; Haleblian & Finkelstein, 1993), in which managers have more opportunities and capabilities to release strategic information to the public if they want to. This consideration for word-based actions/responses is similar to the second consideration for other actions/responses. I limit my study to such a setting, where many word actions/responses are issued and made observable to the competitors.

The CE industry includes eight market sectors: computers and peripherals, mobile phones, televisions, home audio and cinema, video players, imaging device, portable players, and in-car entertainment.

4.1.2 Sample Firms

My sample was selected using the CE Industry data made available by the Global Market Information Database (also known as EuroMonitor or GMID). In the global CE industry, I identified 20 CE manufacturers according to their sales rankings in each market sector. I included, for each sector, manufacturers that are in the top 5 in sales AND whose sales volume comprised more than 5% of sales for the market sector under consideration. All firms that met these two criteria for any given sampling year between 2007 and 2014[3] were included, yielding a set of 20 firms. I consider these 20 CE manufacturers as representing all major players in the CE industry.

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[3] Although Nokia was acquired by Microsoft in 2014, I decide to include Nokia in my sampling firms because it is a dominant player in the market sector of mobile phone from 2007-2013.

Table 5 depicts the market dominance and presence of my sample of 20 major CE players. For the market sector of computer and peripherals, the dominant players are Apple, Hewlett-Packard, Samsung, Lenovo, Acer and Dell (ranked by market share in 2013)[4]. For the market sector of mobile phones, the dominant players are Samsung, Nokia, Apple, and LG. For the market sector of television, the dominant players are Samsung, LG, Sony, Panasonic, and Sharp. For the market sector of home audio and cinema, the dominant players are Sony, Panasonic, Koninklijke Philips, and Samsung. For the video player market sector, the dominant players are Sony, Samsung, Koninklijke Philips, LG and Panasonic. For the imaging device market sector, the dominant players are Canon, Nikon, Sony, Fuji Photo, and Samsung. For the portable device market sector, the dominant players are Apple, Sony, Amazon.com, and Samsung. For the in-car entertainment market sector, the dominant players are Garmin, Pioneer, JVC Kenwood, TomTom, and Sony. In total, those 20 major CE manufacturers take up 63.4% of the revenues represented by the CE industry.

4.2 Overall Research Procedure

4.2.1 Data Collection

To identify actions and responses I adopt an approach that is widely employed by CD researchers—structured content analysis (Chen, 1988; Ferrier et al., 1999; Smith et al., 1992; Young et al., 1996; Yu, 2003). Important competitive events of major CE manufacturers include action-based moves and word-based moves over the period between January 1, 2007 and December 31, 2014. Data about competitive events are

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[4] Since I consider manufacturers that are in the top 5 in sales and whose retail volume comprised more than 5% in "any given sampling year", there are six dominant players in the computer and peripheral market sector.

collected from news and press releases that are archived on RavenPack, Factiva and firm websites. RavenPack is a news analytical tool that provides information about Dow Jones news including DJ Newswire and Wall Street Journal articles. RavenPack identifies the publish time of news, related companies, and types of news (e.g. merger and acquisition, product price cut), which are mostly important for my dissertation.

Financial data of the sampling firms is from Compustat and the Global Market Information Database. Data about firm reputations for stakeholders is collected from Fortune's ranking of "World's most admirable companies". Data about CEO tenure and CEO duality is collected from firm annual reports, proxy statements, and firm websites.

4.2.2 Identification of Action-based and Word-based Competitive Moves

My dataset of competitive moves is mainly based on RavenPack and supplemented by Factiva and firm websites. I conducted the following steps to generate the competitive move dataset. (1) The original search of sampling firms within the sampling years (2007-2014) in RavenPack yielded 20,068 news articles. (2) I removed duplicated news based on RavenPack's Event Novelty Score (i.e., ENS=100). (3) I coded competitive-move related news categories from 214 news categories. Two experts on competitive dynamics also coded those categories separately. We compared and discussed our results and finalized 81 competitive-move related categories, yielding 7,221 prospective competitive moves.

Following previous CD studies, a competitive action is considered as a specific and externally observable market-oriented move made by a firm in order to improve or defend its competitive position in a given market sector, such as a price cut, a promotion campaign, and a market expansion. I identify an action based on the following criteria: (1)

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The event is conducted by the focal firm, not by other parties (e.g. media commentary);

(2) The event is a competitive move, not a financial statement; (3) It either had occurred

at the time of public release or was expected to occur with certainty (i.e., the report

mentions specifics like date, location, and content of action).

As I defined it earlier, a word-based move is a specific and public announcement

of a focal firm's *potential move* in response to a competitor's word or action attacks. A

word-based move expresses a responder's strategic intent to retaliate although in a

reversible way. I identify a word action based on the following criteria. (1) The event is

conducted by the focal firm, not by other parties; (2) It is announced by an official source

of a firm (e.g. press release, spokesperson, or top executive), not by rumor; (3)

Announcement includes a strategic intent, initiative, or plan (i.e., potential action). It is

not an action that had already occurred and is not concurrent with the announced intent.

For example, "Hewlett-Packard confirms it is in talks with EDS for M&A" or "Product

xxx is available today/tomorrow" are not considered as word actions because they are

concurrent with the announced actions.

I list two examples of word actions here. One is from Hewlett-Packard, and the

other is from Dell.

> *HP today announced new research initiatives from HP Labs, the company's central research arm, aimed at developing new technologies and business models that leave a lighter carbon footprint. "HP's long-standing commitment to the environment is second to none in the technology industry. Today, HP Labs extends our dedication with these important research initiatives that will advance the state of the art in sustainable IT," said Prith Banerjee, senior vice president, research, and director, HP Labs. "HP Labs will lead the industry in developing the technology that could dramatically reduce energy consumption and the carbon footprint of entire industries."*

"When we look at the potential for expansion, we do see enormous opportunity ahead. [...] As far as the U.S. goes, I think the U.S. will be OK, but not the fastest-growing." "We expect more growth in Asia. This year, we plan to introduce 50 percent more notebook platforms than we introduced last year, including exciting new products aimed exactly at Chinese customer needs", said Michael Dell (CEO of Dell) at a news conference.

For action responses and word responses, I follow Ferrier, Smith and Grimm (1999) and Yu and Cannella (2007) and identify competitive responses based on temporal sequence. That is, I consider a subsequent action/word action from a rival that occurs after a competitive action of another firm as a competitive response. The response occurs in the market in which the initiating action occurred (the attacked market).

I check the reliability of the coding schemes of competitive moves with two other researchers in strategic management. Three of us coded a random subsample of 50 competitive moves separately, including actions and word actions. I compared our coding results and the inter-rater agreement is good (Cohen's Kappa is 0.85).

I identified the market of the competitive moves first based on keywords of each market. For example, market of computer and peripheral includes keywords like computer, PC, laptop, printer, monitor, scanner, and LaserJet; market of mobile phones includes keywords like mobile, phone, cellphone, 3G, handsets, iPhone, and Galaxy; market of television includes keywords like TV, television, LCD, LED, and Plasma; market of home audio includes keywords like speaker; market of video player include keywords like DVD and VCD; market of camera includes keywords like camera; market of portable player includes keywords like iPad, Kindle, touchpad, tablet, and iPod; market of in-car entertainment includes keywords like GPS. I then carefully manually checked those categories and recoded them if necessary.

After manual and computer-aided coding, prospective moves that are not competitive moves or not in the eight markets or are duplicates are dropped from the competitive move dataset. The final dataset includes 550 word-based moves and 2393 action-based moves, 2943 competitive moves in total.

4.3 MEASUREMENT

In this section, I discuss the measures of the dependent variable, the proposed antecedents of word responses and important control variables.

4.3.1 Dependent Variable

The dependent variable of this study is the likelihood of word response. I measured word response as a dichotomous variable representing the occurrence of the event. I coded the occurrence of word response as 1, and other situations (action response and non-response) as 0.

4.3.2 Independent Variables

Action Type

Action type is defined and dichotomized as strategic actions or competitive moves that are not strategic actions. Following pervious CD studies (Chen et al., 1992; Miller & Chen, 1994), strategic actions indicate significant commitment of resources, including actions such as major product actions, capacity-related actions, mergers and acquisitions, and strategic alliances. Competitive moves that are not strategic actions include pricing actions, marketing actions, minor product actions, and word-based moves. Since Ravenpack classifies all Dow Jones news into different news types (e.g. product price-cut and acquisition), I further classify those news types into my measure of action type. In

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addition, I consider competitive moves that include keywords like "update, upgrade, enhance, extend, expand" to be tactical actions.

Market Dependence of the Responder

Market dependence of the responder is defined as the extent to which a responder relies on the markets affected by an action (Chen & MacMillan, 1992). In my empirical setting, it is the proportion of the firm's retail volume that derives from the market sector of the action in the year the action was taken. For example, if the action occurred in the television market sector, the market dependence of the responder is the retail volume of the television market sector divided by the responder's total retail volume across all market sectors in that given year.

Multimarket Contact (MMC)

There are several ways/levels to measure MMC, such as dyad and firm-in-market level of measurement (Gimeno & Jeong, 2001). Because I am interested in a responding firm's competitive decision within a specific market, I used the firm-in-market measure of MMC to study the occurrence of word response. Firm-in-market MMC captures the extent of overlapped markets (other than the focal market) between a focal firm and other market participants in the focal market (Baum & Korn, 1996; Boeker et al., 1997; Gimeno & Woo, 1996). To test Hypothesis 3, I measured the MMC of firm i in market m as follows:

$$MMC_{im} = \frac{\sum_m \sum_{j \neq i}(D_{im} \times D_{jm})}{N_{MMC}}, \text{for all } j \sum_m (D_{im} \times D_{jm}) > 1,$$

where N_{MMC} is the number of firms j that contact the responding firm i in market m (firm j encounters with firm i in more than one market), D_{im} is an indicator variable that sets to 1 if firm i is present in market m and 0 otherwise, and D_{jm} is set to 1 if firm j is present in market m and 0 otherwise. Thus, the overall measure of MMC of the responder i in market m is the average market domain overlap with multimarket competitors j encountered at market m.

In the robustness check, I also tested the dyad level measure of MMC, which captures the extent of overlapping markets between the responder and the actor (Baum & Korn, 1999).

Competitive Aggressiveness of the Actor

Competitive aggressiveness of the actor is defined into two dimensions: action volume and action complexity (Yu et al., 2009). I adopt Yu and colleagues' (2009) measure of competitive aggressiveness, which is consistent with prior CD studies (Ferrier, 2001; Miller & Chen, 1996; Young et al., 1996). Action volume is the total number of competitive actions initiated by the actor in a given year, while action complexity is the extent to which the actor carries out a broad range of competitive actions, captured by the total number of action types. Different action types in this study include: (1) major product action, (2) minor product action, (3) merger and acquisition, (4) alliance, (5) capacity action, (6) legal issue, and (7) changes in organizational structure. I use factor analysis to generate the composite variable competitive aggressiveness of the actor. Cronbach's alpha for the two component measures is 0.84, and they are loaded at 0.78 onto a single principal component factor.

Firm Reputation of the Responder

Pfarrer, Pollock, and Rindova's (2010) study about firm reputation and celebrity pointed out that the dichotomous approach to firm reputation (i.e., high reputation vs. low reputation) is more appropriate than the continuous measure when firm reputation needs to be separated from firm celebrity, which is measure by media visibility. This is because continuous ranking may create an artificial difference where no real difference exists (Rao, 1994). Because media visibility is also an important variable that may influence the likelihood of word response, I will include it as a control variable. Therefore, the dichotomous measure of firm reputation is more appropriate for my study.

Consistent with prior studies (Basdeo et al., 2006; Fombrun & Shanley, 1990; Pfarrer et al., 2010; Roberts & Dowling, 2002), data on firm reputation is based on the rankings in Fortune's "World's Most Admired Companies". I code a responder as having a high reputation if it appears among the top 50 firms on the list (1 for high reputation and 0 otherwise). Table 6 shows the firm reputations of the 20 major CE manufacturers.

Responder CEO Tenure

CEO tenure is measured as the total number of years an individual had held the chief executive officer position with a company (Henderson et al., 2006; Wu et al., 2005). These data are collected from company filings and official websites.

Responder CEO Duality

The CEO duality is coded as 1 when a CEO also serves as the board chairman, and 0 otherwise. These data are collected from company filings and official websites.

4.3.3 Control Variables

Firm Level Controls

For the attacker, I include firm size, organizational slack and firm reputation. For the responder, I include firm size, organizational slack, and firm media visibility. Firm size is measured by total number of employees. Organizational slack is the ratio of current assets over current liability. Firm size and organizational slack indicate the firm's capability to respond with an action response, and thus may influence the manager's decision to use a word response. In addition, firm size and organizational slack may be highly correlated with firm reputation, so it is important to include them in the model.

Firm media visibility captures the public attention garnered by a firm (Pfarrer et al., 2010). Similar to firm reputation, I adopted a dichotomous measure for firm media visibility (high vs. low). It is measured through the total number of news articles that mentioned about the firm in a given year in RavenPack. If a firm is at the top quartile of sampled firms for the number of published articles, it is coded as 1 (i.e., high media visibility). Other firms are coded as 0 (i.e., low media visibility). Because word responses are public statements published by major news channels, I want to remove the publishing bias, that is, some firms are favored by the media while others are not.

CEO-Level Controls

For CEO-level control variables, I include age and background. CEO age is measured in years. CEO age may also influence the likelihood of a word response, because age reflects risk propensity. CEO background notes the presence of a technological background (with a Bachelor degree in Science vs. Arts). In the CE

industry, many CEOs have technical backgrounds and many have business backgrounds. It is possible that CEOs with technical backgrounds are less vocal and thus less likely to use word responses to deter rivalry.

Controls of Competitive Moves

Since I argue word-based moves are different from action-based moves and focus on exploring the antecedents of word responses, I include word action from the attacker as a control variable. I also consider the rivalry/competitive environment of response is important to study the occurrence of word response, so I control actions by rivals in markets in the past 14 days, actions by the responder in markets in the past 14 days, word-based moves by rivals in markets in the past 14 days, word-based moves by the responder in markets in the past 14 days. I chose 14 days because 90% of the firms respond within 14 days. For robustness check, I control 7 days and 21 days separately.

4.4 Overview of Statistical Analysis

Cox proportional hazards regression models are employed to test the hypotheses generated from the theoretical model of word response with the occurrence of word response comprising the outcome (dependent variable).

Early CD studies have used ordinary least squares (OLS) regression to model the time between an action and a response (Chen et al., 1992). However, OLS can suffer the issue of right censoring and cannot rigorously capture the non-response situation in a finite time window (Yu & Cannella, 2007). The right censoring is likely to bias the coefficient estimates downward. Event history analysis (Allison, 1984) can resolve the right censoring problem by not modeling the response time but the hazard rate (Ferrier et

al., 1999). In this study, the hazard rate is the likelihood that a word response can be observed at time *t*, given that no response occurred prior to *t*. Because the event history approach models a conditional likelihood, it does not suffer from the right-censoring issue.

The unit of analysis of my study is the dyad-market (the actor-responder-market), and the failure event is the occurrence of a word response. The aim is to determine how the occurrence and timing of word responses depends on several covariates (independent variables). A firm becomes at risk of responding with words when a rival initiates an action or word attack in the market where the focal firm also competes. This approach is different from a matching approach that identifies a target responder for each attack. I treat any firm that competes at the focal market as rival, following the "focal-market-rival" approach (Gimeno & Woo, 1999).

Starting on the date of the first action or word action taken by either dyad competitor after January 1, 2007, I stop the current observation and start a new observation under the following conditions: (1) the attacker initiates another action or word action (with no response to the first action); (2) the responder responds with action (with no word response to the first action); or (3) the responder responds with words. I code the first two cases as "censored", and the third case as "failure". In addition, I set up a window of 46 days (99% of firms respond within 46 days) and censor the case if there is no response within the window.

For my study, it is crucial that event history analysis can also address right-censoring of action response, as well as non-response. According to Allison, when there are multiple events, "you don't' need to estimate models for all event types unless you

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really want to" (Allison, 2010, p. 206). Since I am only interested in the effects of covariates on word responses, I can simply estimate a single model of word responses, and treat other response types as censored.

I further consider semi-parametric Cox proportional hazards regression models are more suitable than parametric models to my study because they are more flexible. Cox models allow researchers to make inferences on the effects of covariates on hazard rates without assumption of the baseline hazard function for word responses. Cox models assume that hazard rates are proportional over time, that is, the effect of each covariate on hazard rate is the same at any points in time if conditions are controlled (Allison, 2010).

The Cox proportional hazards model can be written as:

$$h(t) = h_0(t)e^{\beta_1 x_1 + \cdots + \beta_k x_k}$$

where $h_0(t)$ is the baseline hazard, unspecified.

In addition, because there are repeated failure events (i.e., word responses) for the same firm, the error variance may not be independent. Unobserved heterogeneity may induce autocorrelation (Wooldridge, 2002). Therefore, I clustered robust standard errors by responding firm ID to improve the efficiency of the model.

4.5 SUMMARY

This chapter describes why I chose the CE industry, how I selected the 20 major CE manufacturers, how I identified actions and word actions, how I measured those proposed antecedents of word responses, and what analytical method I used in this study.

CHAPTER 5

RESULTS

In this chapter, I first report the descriptive statistics of my sample and then present the results of analyses used to test my hypotheses.

5.1 Descriptive Statistics

Appendix A reports the descriptive statistics of variables used in this study, including means, standard deviations, and correlations. Modest correlations among variables reduce the concern of multicollinearity. To test multicollinearity, I ran OLS regressions with the full model including all interactions to generate variance inflation factors (VIF). I found that no variable had a VIF greater than 3, a value well below the recommended ceiling of 10 (Chatterjee & Price, 1991). Therefore, I conclude that multicollinearity is not a concern in my study.

Based on the dataset of competitive move (2943 competitive moves in total), I constructed a dataset using the actor-responder-market as the unit of analysis. The total number of observations is 37,535 across eight years (2007-2014), including non-response 33,813 (censored at 46-day window, 90.08%), action-response 2,875 (7.66%), and word-response 847 (2.26%). The response ratio lower than 10% is reasonable because we treat all competitors that have market existence in the attacked market as potential responders (i.e., risk set).

Figure 3 visually presented the distribution of word responses and action responses in the eight CE markets. Among 847 word responses from my 20 sampling firms between 2007 and 2014, there are 172 word responses (20.3%) in the computer and peripherals market, 209 word responses (24.7%) in the mobile phone market, 178 word

responses (21%) in the television market, 44 word responses (5.2%) in the home audio market, 44 word responses (5.2%) in the video player market, 55 word responses (6.5%) in the imaging device market, 99 word responses (11.7%) in the portable player market, and 46 word responses (5.4%) in the in-car entertainment market.

Figure 4 depicts the smoothed hazard functions for word responses, which reveals the nature of the underlying baseline hazard function for the event of interest. That is firms are more likely to use word responses right after the attack, and the likelihood decreases over time. To test the hypotheses, I use a semi-parametric Cox model that does not make assumptions about the shape of the hazard function. The shape of hazard could be increasing, decreasing, constant, or anything else.

To test the proportional hazard assumption, I include the interactions of time dependent covariates and time in the Cox model, and there was no significance for any of those interactions. Therefore, I concluded that the proportional hazard assumption is not violated.

5.2 Results of Hypothesis Testing

Appendix B presents the results of Cox proportional hazards model for my hypothesis testing. The coefficients in Appendix B are odds ratios. Odds ratios— exponentiated coefficients—represent the change in likelihood of word responses with a 1-unit change in the corresponding covariate. Odds ratios above 1 indicate positive relationships between covariates and the likelihood of word responses, while odds ratios below 1 indicate negative relationships between covariates and the likelihood of word responses. If the odds ratio equals 1, it means no effect.

Model 1 includes control variables only. Model 2 includes the main effects

(Hypothesis 1-6). Model 3-Model 8 include interaction effects separately. Model 9 is the

full model.

Model 2 (the main effects model) shows an improvement in model fit over Model

1 (the baseline model). A likelihood ratio test is used to compare the two models. Model

2 provided a better fit to the data than did the baseline model $(\chi^2=55.25, p < 0.01)$[5].

5.2.1 Under What Situations Are Responders Motivated to Use Word Responses?

Based on the action-response perspective, Hypotheses 1, 2 and 3 are developed to

explore four typical characteristics of the action, the market and the actor—action type,

market dependence, multimarket contact, and competitive aggressiveness of the actor.

Hypothesis 1 suggests that when the initiating action is a strategic action, firms

are more likely to use word responses. To test the hypothesis, I measure the action type as

a dummy variable (1 strategic action, 0 non-strategic action). Appendix B provides

support for Hypothesis 1. The odds ratio in Model 2 is 1.344 $(p < 0.05)$. This suggests

that when the attack is a strategic action, firms are 34.4% more likely to respond with

words.

Hypothesis 2 argues that when the attacked market is important to the responder,

the responding firm is more likely to use word responses. Market dependence is

measured as the proportion of the firm's sales in the attacked market in the year the attack

was taken. Model 2 shows that Hypothesis 2 is strongly supported. The odds ratio is

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[5]I used the likelihood ratio test for cox models without clustered standard error since Stata considers "LR
test likely invalid for models with robust vce". I aslo used Wald test to test the difference between Model 2
and Model 1 with clustered standard error. The results show that Model 2 (the main effects model) is a
better fit than the baseline model $(\chi^2=171.04, p < 0.01)$.

1.010 ($p < 0.01$), which means that a 1% increase in market dependence is associated with 1% increase of likelihood in observing the occurrence of word response.

Hypothesis 3 suggests that when the responder and rivals compete simultaneously in multiple markets, we are more likely to observe word responses. High level of Multimarket Contact (MMC) indicates a high level of overlapping markets between the responder and other rivals in the market. Appendix B provides support for Hypothesis 3. The odds ratio is 1.493 ($p < 0.05$). This suggests that firms are 49.3% more likely to respond with words if there is one-unit increase in MMC.

Hypothesis 4 argues that if the actor is very aggressive, firms are less likely to use word responses. Aggressiveness of the actor is measured by action volume and action complexity. To test this hypothesis, I include firm size, firm reputation and organizational slack of the actor as control variables. Appendix B indicates that Hypothesis 4 is not supported.

5.2.2 What Kinds of Responders Are More Likely to Use Word Responses?

To answer the second research question, I focus on three firm/CEO characteristics that are well studied in strategic management but less studied in competitive dynamics—firm reputation, CEO tenure, and CEO duality.

Hypothesis 5 suggests the firm reputation of the responder is positively associated with the likelihood of word response. Firm reputation is measured as a dummy variable. Since firm reputation may be related to many other firm characteristics, I controlled for three important characteristics of the responder—firm size, firm visibility, and organizational slack. Model 2 shows that Hypothesis 5 is not supported.

Hypothesis 6 predicts that CEOs who stay in their positions for a longer time tend to use word responses. Hypothesis 7 predicts that CEOs who are also the chair of board are more likely to use word responses. To test these hypotheses, I include CEO tenure and CEO duality as independent variables. Hypothesis 6 and Hypothesis 7 are not supported. CEO duality is found to be negatively associated with the likelihood of word response with hazard ratio of 0.539 (p <0.01). It suggests that dual CEOs are 46.1% (1-53.9%) less likely to use word responses.

Hypotheses 8a, 8b, 8c, 9a, 9b, and 9c predict the moderation effect of CEO tenure and CEO duality on word responses. I argue that CEO tenure and CEO duality may strengthen the effects of strategic action, market dependence, and MMC on word responses. Interactions are added in Model 3, 4, 5, 6, 7, and 8 separately. Model 9 is full model with all interactions.

Appendix B shows that only Hypothesis 8b is supported. The odds ratio is 1.001 ($p < 0.05$), indicating a positive moderation effect. The positive interaction is demonstrated by the slopes in Figure 5. The increase in hazard of word response associated with market dependence is stronger for long-tenured CEOs. In other words, although we do not know whether CEOs with long tenure are more likely to respond with words, they are more likely to do so if an important market of the responder is attacked. This hypothesis is supported. For Hypothesis 8c, it is interesting to find that CEO with longer tenure are less likely to respond with words if the actor and the responder have high level of MMC. The moderation effect of CEO tenure on the relationship between MMC and likelihood of word response is negative and significant (odds ratio=0.963, $p < 0.05$). This is opposite from what I expected.

5.2.3 Other Findings

There are some interesting findings based on the control variables shown in Appendix B.

Since I argue that word-based moves should be different from action-based moves, I consider it is important to include word action from the attacker as a control variable. In Model 2, the odds ratio is 1.417 ($p < 0.05$), which means when the initiating competitive moves are word attacks, firms are 41.7% more likely to use words to respond.

Chen and Hambrick's (1995) study showed that firm size was also an important factor in competitive dynamics. They found that small firms initiated more actions and with faster speed, but they are less responsive to action attack and slower to respond. In my study, large firms are found to be 20.9% ($p < 0.10$) more likely to use word responses than small firms in Model 2.

In regard to competitive context of word responses, I found that if the responding firms are more active in action-based moves in the past 14 days, they are more likely to use words to respond. The odds ratio is 1.335 ($p < 0.05$) in Model 1 (baseline model with only control variables) and 1.241 ($p < 0.05$) in Model 2 (the main effect model). Model 1 in Appendix B also shows that firms are more active in word-based moves in the past 14 days are 20.9% ($p<0.10$) more likely to use word responses. But the significant effect disappears in Model 2.

5.3 Robustness Check

In this section, I conduct several robustness checks, including multinomial logistic regression, competitive contexts with different length of period as control variables, controlling for market concentration and removing window censoring.

5.3.1 Multinomial-logistic Regressions

Multinomial logistic regressions simultaneously estimate the likelihood of observing multiple outcomes. I coded non-response as 0, action response as 1, and word response as 2. Appendix C shows the results of the multinomial logit model for action response and word response, with non-response as the base comparison group. Model 1 is the main effects model. I added interactions into Model 2-Model 7 separately. Model 8 is the full model with all interactions.

The results of the Cox models are supported in the multinomial logit model in general. Same as the Cox model, the effects of strategic action, market dependence, and MMC are positive and significant on word responses. Different from the Cox model, Hypothesis 4 is supported (β=-0.081, p<0.01) in this multinomial logit model. When the actor has recently been very aggressive in the past, responding firms are less likely to use word responses.

5.3.2 Different Competitive Contexts

As I mentioned, I chose 14 days for measuring competitive context of word response because 90% of firms respond with words or actions within 14 days. Here, I test the Cox model with two different length of period: 7 days and 21 days. The results of main effects and interactions for 14 days are robust in the models for different competitive contexts.

5.3.3 Controlling Market Concentration

As I mentioned, my model of word response is most appropriate in oligopolistic settings. I included market concentration variable into my Cox model to check the robustness of the results. I used Herfindahl-Hirschman Index (HHI) to measure market

concentration, which is the sum of the squared market shares of firms in a given market. High HHI indicates a few large firms in the market, while low HHI indicates a large number of small firms in the market. The effect of market concentration on word response is significant in Model1 (odds ratio=4.001, p<0.05) and not significant in other models. Other results are similar to my main analysis (see Appendix D).

5.3.4 Other Robustness Checks

In this study, I set up a window of 46 days for my primary analysis because 99% of firms respond within 46 days, and then censor the case if there is no response within the window. I tested the Cox model again without the 46 days window, and the results are robust.

I also tested an alternative measure of MMC, the dyad-level measure, in the Cox models. Results are similar.

5.4 SUMMARY

This chapter presents the empirical evidence about the antecedents of word responses. Appendix B presents a summary of results for the Cox proportional hazard model. Regarding the characteristics of the action, the market, and the actor, I find that firms are more likely to use word responses (1) when the initiating action is a strategic action, (2) when an important market is attacked, and (3) when the responding firm has multiple markets overlapped with the attacker. Regarding the characteristics of the responder, different from what I expected, dual CEOs are less likely to use word responses. For the moderation effect, I find that long-tenured CEOs are more likely to use words to respond, if the responder relies highly on the attacked market.

I also present some interesting findings for control variables. Firms are more likely to use words to respond to word attacks; larger firms are more likely to use word responses; when responders are very active in actions in the recent past, they are more likely to use word responses.

Four robustness checks are conducted, including multinomial logit model. The results are robust in general. A further discussion will be presented in the next chapter.

CHAPTER 6

DISCUSSION AND IMPLICATIONS

This chapter is organized as follows. First, I summarize the study and discuss the overall results related to hypotheses testing. Next, I outline my contributions made to the literature and managerial implications. Finally, I discuss the limitations of my study as well future research directions.

6.1 Summary and Discussion

In this study, I argue that word response is different from action response and non-response, and it is an important phenomenon to study. Word response refers to a specific and public statement of strategic intention. On the one hand, word response is not cheap talk that is costless to firms because it is public and there may be long-term cost such as firm reputation. On the other hand, word response is not action response that already occurred or will occur with certainty. Word responses carry some commitment and also some uncertainty. According to Porter's (1980) perspective of competitive signaling, word response is a type of competitive signal that should not be ignored by competitors. The primary objective of using word response is to reduce the intensity of rivalry in order to achieve above-average return.

This paper is the first study to empirically investigate the phenomenon of word response, driven by two fundamental questions—under what situations firms are likely to respond with words and what kind of responders are likely to respond with words. In this study, I focus on some important characteristic of the action, the actor, the market, and the responder based on the action-response perspective, the cornerstone of many competitive dynamics studies. The antecedents I am interested in include action

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type/strategic action, market dependence, multimarket contact, aggressiveness of the actor, firm reputation of the responder, CEO tenure of the responder, and CEO duality of the responder.

My selection of those antecedents is also based on the Awareness-Motivation-Capability (AMC) perspective, a dominant framework in recent competitive dynamics studies. According to the AMC framework, firms are more likely to respond if they are aware of rival's move, motivated to respond, and capable to respond (Chen, 1996). Regarding motivation, I focus on situations under which firms or CEOs may not be motivated to escalate rivalry, such as strategic action, market dependence, multimarket contact and CEO tenure. Regarding capability, I focus on situations under which firms or CEOs may have more/less capability to use word response to deter rivalry, such as aggressiveness of the actor, firm reputation of the responder, and CEO duality of the responder.

Because the phenomenon I am interested in is the occurrence of word responses and that OLS may be biased by right censoring, I use event history analysis to test the effects of characteristics of the action, the market, the actor, and the responder. Particularly, I chose the Cox proportional hazard model due to the flexibility of a semi-parametric model over parametric models, that is, we do not need to assume any particular shape of the baseline hazard function of word responses. The results from Cox regressions are also upheld when I use a multinomial logit approach, which simultaneously estimates the multiple outcome of non-response (base outcome), action response, and word response.

As I expected, I found that firms are more likely to use word responses when the

initiating action is strategic action. Previous literature suggests that firms are less likely to respond to strategic action with action responses (e.g., Chen et al., 1992; Smith et al., 1991). I argue that strategic action also represents important opportunity to create competitive advantage but firms need more time to allocate resource for action response because a strategic action involves a significant commitment of resources and is very difficult to interpret and implement. Word response can be a strategic tool for the responding firm to deliver its intention to respond. It may deter rivalry because it carries some commitment and is quick to implement. In the multinomial logit model (Appendix C), results show that action responses are different from word responses, although the negative relationship between strategic action and action response is not significant.

As I expected, firms are more likely to use word responses when important markets are attacked. Under such situation, previous literature suggests that firms are motivated to respond because they feel directly threatened and the market share is eroded by the attack (Chen & MacMillan, 1992; Chen et al., 1992). My argument is consistent with Chen and MacMillan's hypothesis that market dependence is negatively associated with the likelihood of non-response. I further argue that although firms are motivated to respond to declare their territory or "home turf", they are not motivated to escalate the competition in important markets considering its significant cost. Chen and colleagues' (1992) study presented a finding that was different from what they expected—firms respond with action slower when their important markets are attacked. This may be explained by such concern of escalation of competition at key markets. Because of this concern, firms may use a word response to send out a warning signal first to declare their territory. This hypothesis is supported in the Cox model and the multinomial logit model.

Results of multinomial logit models also show that market dependence is positively

associated with the likelihood of action response.

As I expected, firms are more likely to respond with word responses when the

responder competes with the actor simultaneously in multiple markets. Previous

multimarket competition literature suggested a negative relationship between MMC and

rivalry intensity (Baum & Korn, 1996; Boeker et al., 1997; Yu et al., 2009) or inverted U-

shaped relationship between MMC and rivalry intensity (Gimeno & Woo, 1999;

Jayachandran et al., 1999). Meanwhile, some studies indicated a positive relationship

between MMC and action response speed (Young et al., 2000; Yu & Cannella, 2007).

They argued that firms with more MMC with the actor have more incentives to enforce

the norm of "mutual forbearance". Building on the literature of multimarket competition,

I further argue that firms with more MMC are motivated to send out a signal to restore

the mutual forbearance but are not motivated to escalate the competition because a

competitive war across multiple markets is very costly. Word response can be such a

strategic tool to help the responding firm tone down the rivalry with the attacker. Results

from multinomial logit models show that word responses are different from action

responses. Appendix C shows that the positive relationship between MMC and action

response is not supported, while the positive relationship between MMC and word

response is strongly supported.

Different from what I expected, the effect of firm reputation on the likelihood of

word response is not significant. Results from the multinomial logit model show that firm

reputation is positively related with the likelihood of action response. This may imply

that firms with high reputation tend to use action responses to protect their reputation but

word responses may not be able to perform that function. More interestingly, results from multinomial logit models show that CEO tenure of the responder is positively related with action response, but negatively related with word response. An alternative explanation is that CEOs who stay in their positions longer may prefer a simple and effective way to deter rivalry, which is action response not word response. Furthermore, in the multinomial logit models, CEO duality is negatively associated with both action responses and word responses. It is possible that dual CEOs are less responsive to competitor's moves because they care less about rivalry deterrence.

6.2 Research and Managerial Implications

6.2.1 Research Implications

This study makes several contributions to the current strategic management literature. First, I contribute to the action-response perspective, a cornerstone of competitive dynamics research. Previous literature on the action-response perspective assumes that firms do nothing if they do not respond with actions. I challenge that assumption and argue that firms may also respond with words. Word response can be treated as a response outcome that is different from action response, because word response involves low commitments and is quick to implement. Meanwhile, word responses may be ambiguous, hard to interpret, and less effective than action responses to deter rivalry. As the first attempt to empirically investigate word response, my study tested some important characteristics of the action, the market, the actor, and the responder based on the action-response perspective. I found that a firm was more likely to use word response when the attack was a strategic action, when its important market is attacked, or when it competes with the actor simultaneously across multiple markets.

I also contribute to the AMC perspective, a dominant framework in recent competitive dynamics studies. Previous research using the AMC perspective argues that firms will respond if they are aware of the attack, motivates to respond and capable to respond. I extend the AMC perspective by digging deeper into the motivation and the capability components. I argue that when firms are motivated to respond (e.g. a threat) and capable to respond with action, it is still possible that firms are not motivated to respond with action because of the concern of escalating competition. It is also possible that firms can still respond (with words) when they are motivated to respond with action but need more time to allocate resources or figure out the true intention of the attacker. Word responses provide an alternative tool for firms to influence rival's perception and competitive behavior.

Besides competitive dynamics literature, my study also sheds light on the literature of the strategic use of public language, such as impression management. Previous literature on impression management has been focused on how firms strategically use public language to influence external stakeholders to gain their support and legitimacy, especially when the image of a firm is threatened. My study extend the impression management perspective into competitive settings by arguing firms can use language to influence competitor's perception even though there is direct conflict of interests among competitors. For example, in this study, I argue that top managers can strategically use language to declare territory of home market or restore mutual forbearance.

6.2.2 Managerial Implications

We often observe that top managers use language in public to influence

competition. But meanwhile, top managers may be concerned that "talk is cheap" among competitors. From this study of 20 major CE manufacturers between 2007-2014, I found that firms are more likely to use words to respond under certain situations. It is important for top managers to know that word response can be a powerful and cost-effective tool in competition. On the one side, I suggest managers to take advantage of word response for its quickness to respond and low commitment on resources, especially when the firm has high dependence on the attacked market or high interdependence with the actor. On the other side, managers should be aware of the cost of word response. Reckless use of word responses may cause the firm problems in the future, considering firm reputation and the credibility of top managers. Overall, considering the characteristics of word response, it is likely for top managers to build up an advantage over competitors by proactively using language in competition and being responsive/sensitive to word-based moves from rivals.

6.3 Limitations and Extensions

6.3.1 Limitations

There are several limitations for my study. First, although the research setting of consumer electronics (CE) is a desirable setting to study word-based moves according to the reasons I mentioned in Chapter 4, there are also limitations regarding this research setting. For example, the generalizability of this study's results may not be extended to industries where firms/top managers are relatively "quiet", such as coal and legal service industries. Also, similar to other competitive dynamics studies, my framework of word response is most appropriate in oligopolistic settings where firms are highly dependent on each other. The results of this study may not hold in industries where the interdependence among firms is low.

In addition, because of the environmental dynamism of the CE industry, market sectors are evolving relatively quickly. Different from typical research settings of competitive dynamics like the airline industry with a single market, the CE industry has eight market sectors. Those market sectors might change in the future. There may be new market sectors (e.g., the emergent market of wearables) and market boundaries may become blurred over time. It is important to know that when market sectors change or the boundary between markets becomes more and more ambiguous, it is hard for the competitors to detect a move and identify the move as a threat or opportunity.

The second limitation is about my data sources. Top managers/firms talk in public via multiple channels, such as newspaper, magazine, television, conference call, firm websites, annual reports and social media. I capture word-based moves mainly based on RavenPack and supplemented the data with Factiva and firm websites. It is possible that I missed some word-based moves in other public channels. For example, some CEOs from my sampling firms have their own twitter accounts, such as Amazon CEO Jeff Benzos, Apple CEO Tim Cook, Dell CEO Michael Dell, and etc. Future studies may collect multiple sources of word responses to test hypotheses.

Another limitation is my measure of word response. I identify word responses based on the temporal sequence, following Ferrier, Smith and Grimm (1999) and Yu and Cannella (2007). I consider word response as a rival's word-based move that occurs after the initiating action (i.e., attack). The limitation of the temporal sequence approach of response is that the response may not match with the attack because the response may mention what attack it is responding to.

Another approach of measuring response is based on matching, following Chen and

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colleagues (Chen & MacMillan, 1992). Researchers from this approach usually identify

response first by using keywords like "in response to" and "responding to", and then

trace back to the mentioned attack. The problem of this matching approach is that (1)

majority of competitive moves do not mention the corresponding attack explicitly, and (2)

all observations for this approach always have an outcome of responses and we cannot

capture non-response. Therefore, comparing those two approaches, I consider the

temporal sequence measure of response is more appropriate for my study, but it has its

own limitations.

6.3.2 Extensions

This study offers several possible research opportunities for scholars who are

interested in studying language in competition.

First, regarding the antecedents of language in competition, this study opens doors

for scholar to explore other antecedents of word response. Especially considering that

most hypotheses associated with the responder characteristics (i.e., firm reputation, CEO

tenure, and CEO duality) are not supported in this study, scholars may explore more

about what kind of responders are more likely to use word responses and how are CEO

characteristics associated with their strategic use of language in competition.

Furthermore, while this study is focused on word responses, another important

word-based move, word action, has not been studied. My empirical findings showed a

positive relationship between word action and word response. Future studies are

encouraged to explore whether the underlying mechanism behind word actions is

different from word responses. For example, as Chen (1996) argued, the effects of MMC

on action and response are opposite. While firms with high MMC are less likely to

initiate an action attack, they are more likely to respond with actions. Also, Rindova's (2004) study suggested that words like "war" and "win" can be used to escalate competition in order to marshal support and resources form stakeholders. Therefore, it is very likely that the motivation of using word actions is very different from those of word responses.

Second, regarding the content of language in competition, future studies may explore more characteristics of word responses. There could be different types of word responses. Based on functions, some can be used to seek more information, some to appeal for cooperation, and some can be threatening signals. By integrating with impression management theory, scholars can also explore different types of framing of word responses. For example, it would be interesting to study how do firms use word responses that appeal to institutional logic as a way to gain support from other competitors and challenge the legitimacy of attacker's action.

Third, more research opportunities exist regarding the outcome of language in competition. As the first empirical study to explore the event of word response, I focus on one outcome—the likelihood of the event. Future studies can explore more response characteristics like response time and sequence. For example, researchers may investigate what factors influence the speed of word response and under what situations a word response is followed by its corresponding action response. Future studies may also study the consequences of word responses. After studying the occurrence of the event, scholars may explore more about the effectiveness of word responses (e.g. rivalry deterrence) and its contingencies, such as the credibility of the responding firms.

In summary, building on the traditional action-response perspective and Porter's

perspective of competitive signaling, this dissertation develops a framework to understand word responses, a phenomenon that we often observe but do not know why it occurs. I contribute not only to competitive dynamics literature but also organizational studies on the strategic use of language. The empirical findings and the limitation of this study also offer interesting research opportunities in the future.

Table 1

Major CE Manufacturers

1	Acer Inc
2	Amazon.com Inc
3	Apple Inc
4	Canon Inc
5	Dell Inc
6	Fuji Photo Film Co
7	Garmin Ltd
8	Hewlett-Packard Development Co LP
9	JVC Kenwood Corp
10	Koninklijke Philips Electronics NV
11	Lenovo Group Ltd
12	LG Corp
13	Nikon Corp
14	Nokia Corp
15	Panasonic Corp
16	Pioneer Corp
17	Samsung Corp
18	Sharp Corp
19	Sony Corp
20	TomTom International BV

Table 2

Key Studies about the Antecedents of Action Response

Actor Characteristics	Action Characteristics	Environmental/Market Characteristics	Responder Characteristics
Market share leader (Smith et al, 1992; Derfus et al, 2008)	Visibility (MacMillan et al, 1985; Chen and Miller, 1994)	Emerging/fragmented/mature industry (Smith et al, 1992)	Structural complexity (Smith et al, 1991)
TMT tenure (Smith et al, 1992)	Perceived potential (Macmillan et al, 1985)	Industry concentration (Ferrier et al, 2002; Derfus et al, 2008)	External orientation (Smith et al, 1991)
History as price-cutter (Smith et al, 1992)	Threat of action (Macmillan et al, 1985; Smith et al, 1992 Chen and MacMillan, 1992; Chen, Smith, and Grimm, 1992; Chen and Miller, 1994)	Industry growth (Ferrier et al, 2002; Derfus et al, 2008)	Organizational slack (Smith et al, 1991)
History as strategic player (Smith et al, 1992)	Radicality (MacMillan et al, 1985; Smith et al, 1992)	Barrier to entry (Ferrier et al, 2002)	TMT education (Smith et al, 1991)
	Strategic vs. Tactical (Smith et al, 1991; Smith et al, 1992; Chen, Smith, and Grimm, 1992)		TMT experience (Smith et al, 1991)
	Action Scope (Smith et al, 1992; Chen, Smith, and Grimm, 1992)		Firm size (Chen and Hambrick, 1995)
	Complexity (MacMillan et al, 1985; Chen and Miller, 1994)		TMT heterogeneity (Hambrick, Cho, and Chen, 1996; Ferrier, 2002)
	Implementation requirement of action (Smith et al, 1992; Chen, Smith, and Grimm, 1992; Chen and Miller, 1994)		Managerial cognitive framework of strategic importance (Marcel et al, 2011)
	Irreversibility (Chen and MacMillan, 1992; Chen et al, 2002)		

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Table 3

Key Studies about Action/Response and Consequences

	Action/Response	Focal Firm Performance	Rival Firm Performance
Smith, Grimm, and Gannon (1992)	Speed of action	Financial performance (+)	
	Order of action	Financial performance (-)	
Chen and Miller (1994)	Number of actions		Financial performance of first mover (-)
Miller and Chen (1994)	Competitive inertia	Financial performance (+)	
	Competitive inertia*Market diversity	Financial performance (-)	
Young, Smith, and Grimm (1996)	Firm activity	Financial performance (+)	
Miller and Chen (1996)	Competitive simplicity	Financial performance (-)	
Lee, Smith, Grimm, and Schomburg (2000)	Speed of action (first, second mover)	Financial performance (+)	
	Speed of action		Financial performance of first mover (-)
Ferrier (2001)	Number of actions	Market share gain (+)	
	Duration of actions	Market share gain (+)	
Ferrier and Lyon (2004)	Competitive simplicity*TMT heterogeneity		
Derfus, Maggitti, Grimm, and Smith (2008)	Number of actions	Financial performance (+)	
	Number/speed of actions		Financial performance (-)

Table 4

Key Studies about the Effect of MMC and Rivalry Intensity

MMC	Rivalry Intensity	Contingencies
Baum and Korn (1996)	Negative relationship between MMC and rivalry intensity (e.g firm market entries and market exits)	Market concentration (not supported) and sphere of influence
Boeker , Goodstein, Stephan, and Murmann (1997)	Negative relationship between MMC and market exits	
Baum and Korn (1999)	Inverted U-shaped relationship between MMC and rivalry intensity (e.g firm market entries and market exits)	Competitor's relative size (partially supported)
Gimeno and Woo (1999)	Negative relationship between MMC and rivalry intensity	Resource-sharing opportunities
Gimeno (1999)	Negative relationship between MMC and rivalry intensity	Type of MMC (reciprocal or not), sphere of influence
Jayachandran, Gimeno, and Varadarajan (1999)	Inverted U-shaped relationship between MMC and firm market entries	Sphere of influence, resource similarity, organizational culture, Seller concentration
Haveman and Nonnemaker (2000)	Inverted U-shaped relationship between MMC and rivalry intensity	Market concentration
Young, Smith, Grimm, and Simon (2000)	Negative relationship between MMC and action initiation;	Resource similarity
	Positive relationship between MMC and speed of action responses	Resource similarity
Scott (2001)	Positive relationship between MMC and cross-citations between two firms	
Stephan, Murmann, Boeker, and Goodstein (2003)	Inverted U-shaped relationship between MMC and rivalry intensity	CEO tenure and New CEO
Funentelsaz and Gomez (2006)	Inverted U-shaped between MMC and firm market entries	Strategic similarity, sphere of influence, market concentration
Yu and Cannella (2007)	Positive relationship between MMC and speed of action responses	
Yu, Subramaniam, and Cannella (2009)	Negative relationship between MMC and rivalry intensity (i.e., competitive aggressiveness)	Subsidiary ownership, cultural distance, regulatory restriction, and presence of local competitors

Table 5

Market Dominance and Presence of Major CE Manufacturers

	Major CE Manufacturers	Computers and Peripherals	Mobile Phones	TV	Home Audio and Cinema	Video Players	Imaging Device	Portable Players	In-Car Entertainment
1	Acer Inc	D		x					x
2	Amazon.com Inc	x						D	
3	Apple Inc	D	D					x	
4	Canon Inc	x					D		
5	Dell Inc	D							
6	Fuji Photo Film Co Ltd	x					D		
7	Garmin Ltd								D
8	Hewlett-Packard Development Co LP	D					x		
9	JVC Kenwood Corp			x	x	x	x		D
10	Koninklijke Philips Electronics NV	x	x	x	D	D		x	x
11	Lenovo Group Ltd	D	x	x					
12	LG Corp	x	D	D	x	D		x	x
13	Nikon Corp						D		
14	Nokia Corp		D						
15	Panasonic Corp	x	x	D	D	D	x	x	x
16	Pioneer Corp			x	x	x			D
17	Samsung Corp	D	D	D	D	D	D	D	
18	Sharp Corp		x	D	x	x			
19	Sony Corp	x	x	D	D	D	D	D	D
20	TomTom International BV								D

Note: D indicates Dominant players (Top 5 and more than 5% market share of a market segment in any given year during 2007-2014; x indicates market presence.)

Table 6

Firm Reputation of Major CE Manufacturers

	Major CE Manufacturers	2007	2008	2009	2010	2011	2012	2013	2014
1	Acer Inc	0	0	0	0	0	0	0	0
2	Amazon.com Inc	0	0	0	1	1	1	1	1
3	Apple Inc	1	1	1	1	1	1	1	1
4	Canon Inc	1	0	0	0	0	0	0	0
5	Dell Inc	1	1	0	0	0	0	0	0
6	Fuji Photo Film Co Ltd	0	0	0	0	0	0	0	0
7	Garmin Ltd	0	0	0	0	0	0	0	0
8	Hewlett-Packard Development Co LP	1	1	1	1	0	0	0	0
9	JVC Kenwood Corp	0	0	0	0	0	0	0	0
10	Koninklijke Philips Electronics NV	0	0	0	0	0	0	0	0
11	Lenovo Group Ltd	0	0	0	0	0	0	0	0
12	LG Corp	0	0	0	0	0	0	0	0
13	Nikon Corp	0	0	0	0	0	0	0	0
14	Nokia Corp	1	1	1	0	0	0	0	0
15	Panasonic Corp	0	0	0	0	0	0	0	0
16	Pioneer Corp	0	0	0	0	0	0	0	0
17	Samsung Corp	1	0	1	1	1	1	1	1
18	Sharp Corp	0	0	0	0	0	0	0	0
19	Sony Corp	1	0	1	1	1	0	0	0
20	TomTom International BV	0	0	0	0	0	0	0	0

Figure 1

Theoretical Model of Word Response

Figure 2

Revised Action-Response Perspective

COMPETITIVE CONTINGENCIES

Characteristics of the Actor, the Action,
the Market and the Responder

COMPETITIVE MOVE

Action
Word Action

COMPETITIVE RESPONSE
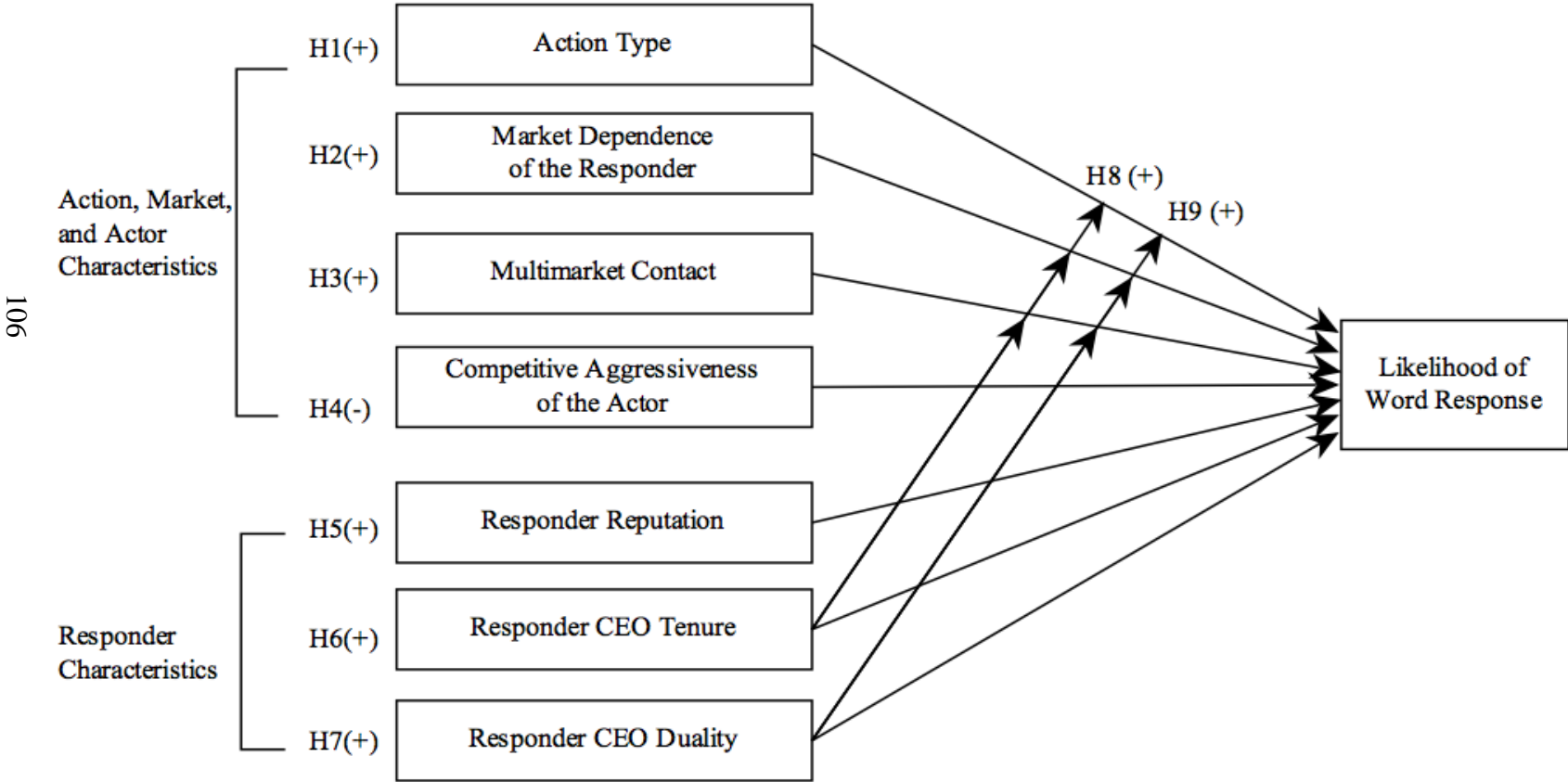
Action Response
Word Response
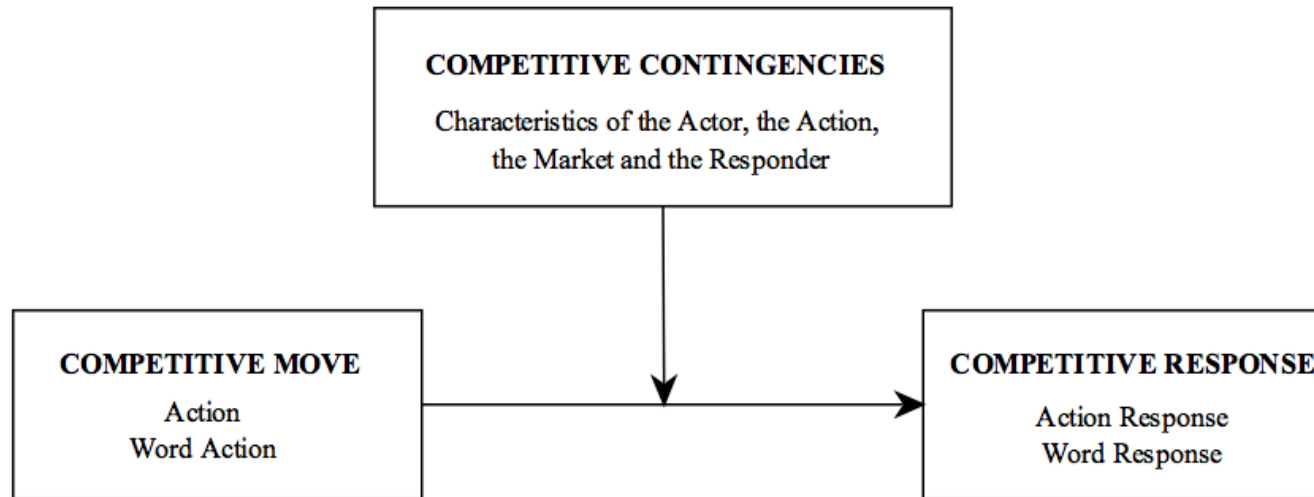
Figure 3

Distributions of Word and Action Response in CE Markets
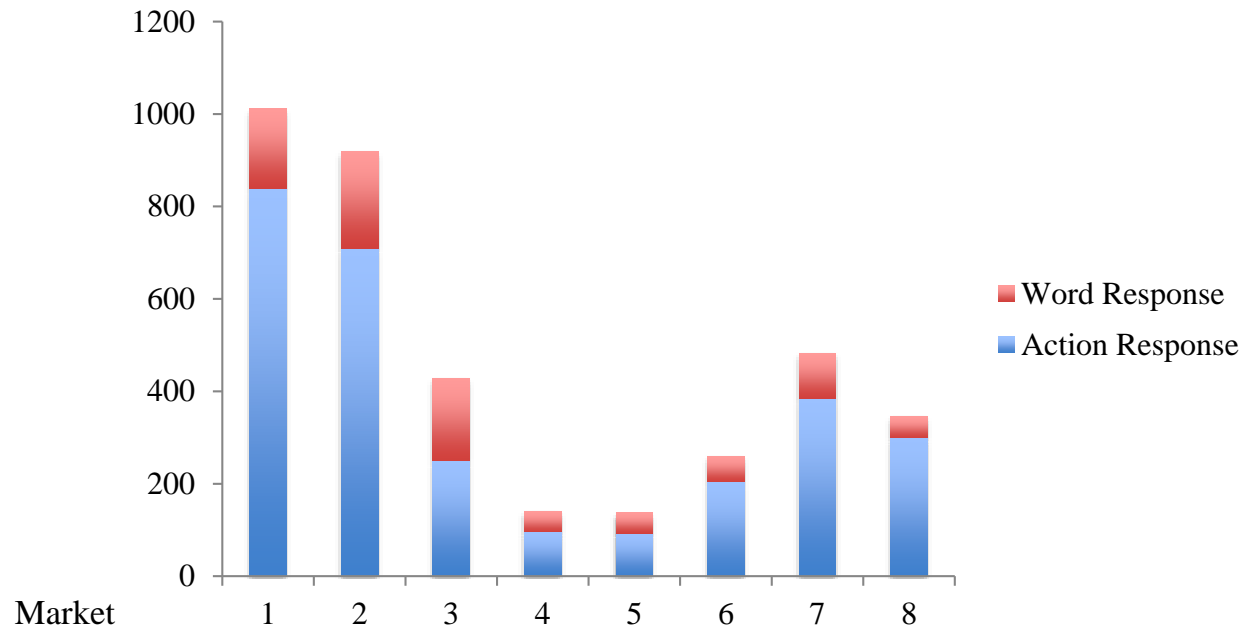
Figure 4

Smoothed Hazard Function for Word Responses

Baseline Hazard (Word Response)
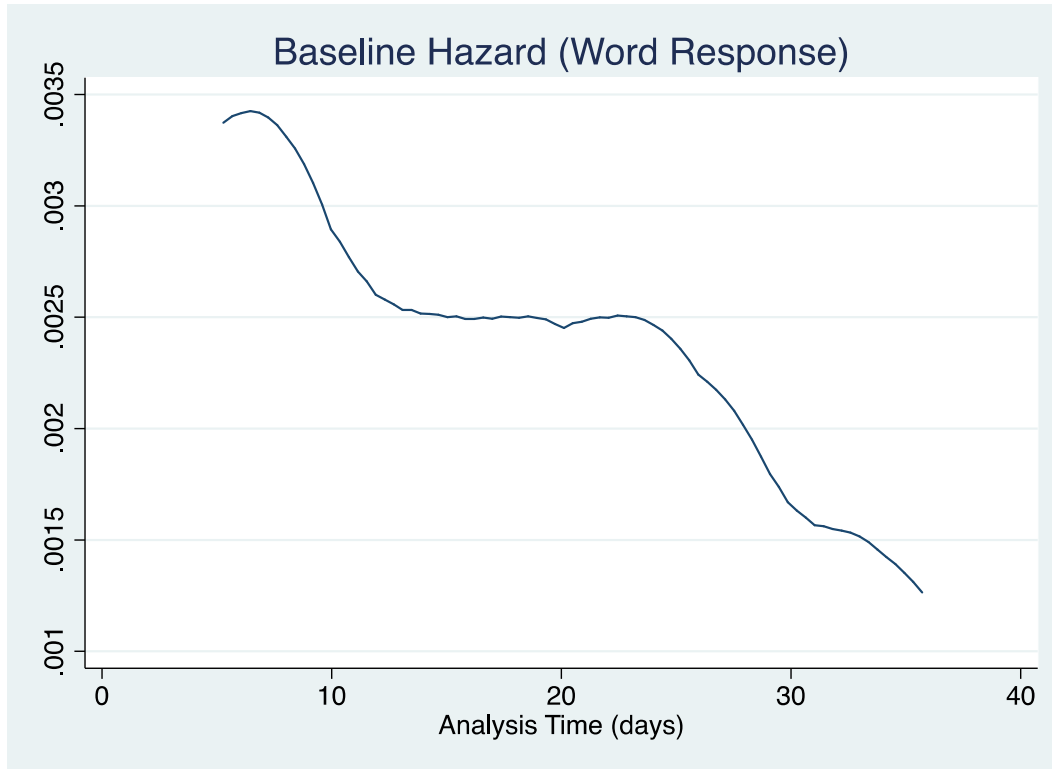
Figure 5

The Multiplier Effect of the Word Response Rate
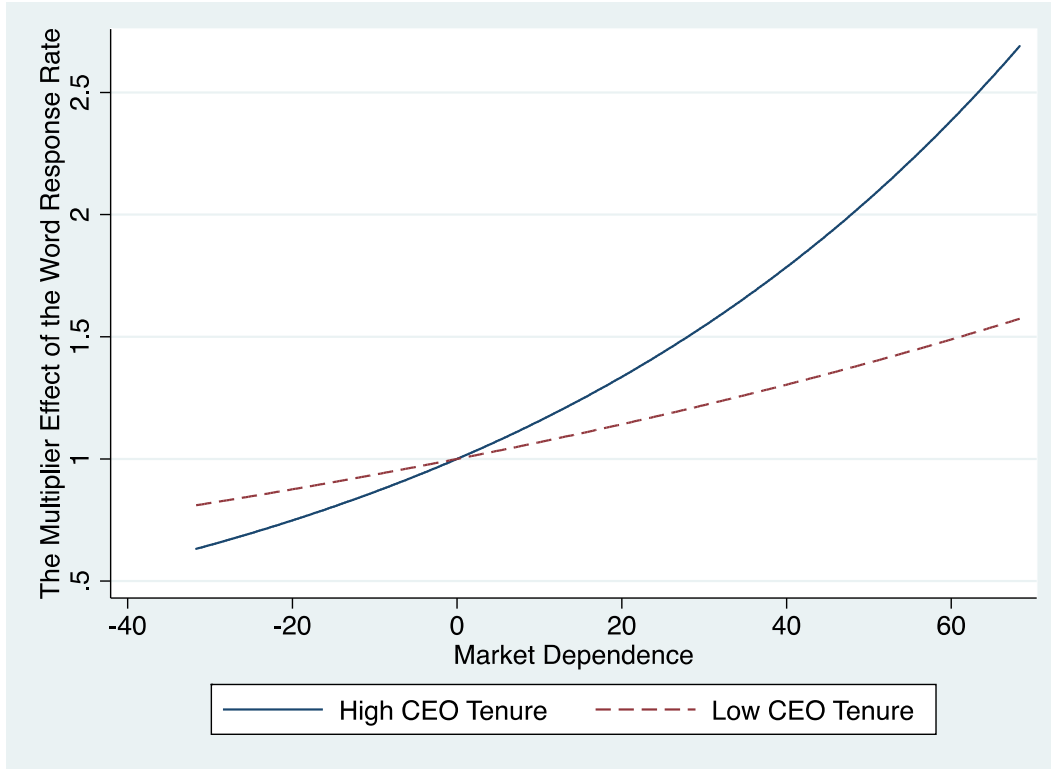
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APPENDIX A

DESCRIPTIVE STATISTICS

Descriptive Statistics

		Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1	Response	0.0200	0.150	1.00***									
2	Strategic action	0.500	0.500	0.0100 (0.29)	1								
3	Market dependence of the responder	31.69	34.79	0.03*** (0.00)	0.01** (0.04)	1							
4	Multimarket contact of the responder	1.050	0.570	0.06*** (0.00)	-0.02*** (0.00)	-0.17*** (0.00)	1						
5	Competitive aggressiveness of the actor	0	0.850	-0.01** (0.02)	0.04*** (0.00)	0.09*** (0.00)	-0.14*** (0.00)	1					
6	Firm reputation of the responder	0.270	0.440	0.04*** (0.00)	0 (0.34)	0.02*** (0.00)	0.28*** (0.00)	0.05*** (0.00)	1				
7	CEO tenure of the responder	5.540	5.630	-0.02*** (0.00)	0 (0.85)	0.18*** (0.00)	-0.20*** (0.00)	0.07*** (0.00)	0.23*** (0.00)	1			
8	CEO duality of the responder	0.370	0.480	-0.05*** (0.00)	0.01** (0.03)	0.25*** (0.00)	-0.29*** (0.00)	-0.04*** (0.00)	-0.24*** (0.00)	0.21*** (0.00)	1		
9	Word action of the attacker	0.220	0.420	0.02*** (0.00)	-0.53*** (0.00)	-0.03*** (0.00)	0.07*** (0.00)	-0.16*** (0.00)	0 (0.43)	-0.03*** (0.00)	-0.02*** (0.00)	1	
10	Firm size of the actor	4.620	1.070	0.0100 (0.18)	0.02*** (0.00)	-0.03*** (0.00)	0.07*** (0.00)	0.0100 (0.31)	0.05*** (0.00)	0 (0.93)	0.0100 (0.32)	0.06*** (0.00)	1

Descriptive Statistics (Continued)

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
11 Firm size of the responder	4.480	1.060	0.04***	-0.0100	-0.28***	0.24***	0.06***	0.16***	-0.23***	-0.40***	0	0.12***
			(0.00)	(0.28)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.64)	(0.00)
12 Firm visibility of the responder	0.240	0.430	0.03***	0	0.24***	-0.14***	0.11***	0.43***	0.40***	-0.11***	-0.03***	0.04***
			(0.00)	(0.85)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
13 Firm reputation of the actor	0.440	0.500	0	-0.04***	0	0.03***	0.36***	0.12***	0.05***	-0.09***	-0.05***	0.07***
			(0.65)	(0.00)	(0.82)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
14 CEO tech background of the responder	0.470	0.500	0	0	-0.07***	0.09***	0.04***	-0.15***	0	0.08***	0	0
			(0.68)	(0.80)	(0.00)	(0.00)	(0.00)	(0.00)	(0.94)	(0.00)	(0.88)	(0.86)
15 CEO age of the responder	59.36	8.750	0	0	-0.28***	0.16***	-0.08***	-0.11***	-0.32***	-0.08***	0.02***	0
			(0.43)	(0.36)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.64)
16 Organizational slack of the actor	0.900	0.200	0	-0.03***	0.05***	-0.05***	0.12***	0.03***	0.03***	-0.01**	-0.13***	-0.17***
			(0.48)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
17 Organizational slack of the responder	0.860	0.180	0	0	0.05***	-0.09***	0	0.17***	0.23***	0.11***	-0.03***	-0.01***
			(0.37)	(0.40)	(0.00)	(0.00)	(0.50)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
18 Actions by competitors in the past 14 days	2.330	2.270	-0.03***	-0.02***	0.01**	-0.20***	0.28***	0.03***	0.12***	0.03***	-0.02***	0.06***
			(0.00)	(0.00)	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
19 Actions by the responder in the past 14 days	0.230	0.580	0.03***	-0.01*	0.26***	-0.11***	0.12***	0.24***	0.14***	-0.06***	0	0.02***
			(0.00)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.54)	(0.00)
20 Words by competitors in the past 14 days	0.620	0.910	-0.0100	-0.03***	0	-0.07***	0.14***	0.01***	0.05***	-0.01***	0.02***	0.03***
			(0.17)	(0.00)	(0.82)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
21 Words by the responder in the past 14 days	0.0700	0.270	0.02***	-0.01*	0.10***	0.01***	0.05***	0.11***	-0.01**	-0.06***	0.01**	0.0100
			(0.00)	(0.05)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.05)	(0.17)

Descriptive Statistics (Continued)

		11	12	13	14	15	16	17	18	19	20
11	Firm size of the responder	1									
12	Firm visibility of the responder	0.04*** (0.00)	1								
13	Firm reputation of the actor	0.08*** (0.00)	0.06*** (0.00)	1							
14	CEO tech background of the responder	-0.03*** (0.00)	-0.21*** (0.00)	0.03*** (0.00)	1						
15	CEO age	0.35*** (0.00)	-0.34*** (0.00)	-0.05*** (0.00)	-0.22*** (0.00)	1					
16	Organizational slack of the actor	0.0100 (0.29)	0.02*** (0.00)	0.17*** (0.00)	-0.01** (0.04)	0.02*** (0.00)	1				
17	Organizational slack of the responder	-0.04*** (0.00)	-0.01* (0.05)	0.01** (0.02)	-0.05*** (0.00)	0.19*** (0.00)	0.07*** (0.00)	1			
18	Actions by competitors in the past 14 days	0.01*** (0.01)	0.05*** (0.00)	0.16*** (0.00)	0.04*** (0.00)	-0.03*** (0.00)	0.03*** (0.00)	0.05*** (0.00)	1		
19	Actions by the responder in the past 14 days	0.07*** (0.00)	0.29*** (0.00)	0.07*** (0.00)	-0.10*** (0.00)	-0.11*** (0.00)	0.01*** (0.01)	0.13*** (0.00)	0.10*** (0.00)	1	
20	Words by competitors in the past 14 days	0 (0.74)	0.02*** (0.00)	0.07*** (0.00)	0.02*** (0.00)	-0.01*** (0.01)	0 (0.98)	0.01** (0.05)	0.36*** (0.00)	0.10*** (0.00)	1
21	Words by the responder in the past 14 days	0.05*** (0.00)	0.09*** (0.00)	0.03*** (0.00)	-0.0100 (0.26)	-0.04*** (0.00)	0 (0.41)	0 (0.62)	0.09*** (0.00)	0.12*** (0.00)	0.06*** (0.00)

Note: Standard errors are in parentheses. * $p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

APPENDIX B

RESULTS OF COX PROPORTIONAL HAZARDS MODEL FOR WORD RESOPNSE

Results of Cox Proportional Hazards Model for Word Response

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Strategic action		1.344**	1.347**	1.346**	1.343**	1.328*	1.344**	1.345**	1.331*
		(0.182)	(0.184)	(0.183)	(0.183)	(0.206)	(0.182)	(0.183)	(0.215)
Market dependence of the responder		1.010***	1.010***	1.011***	1.010***	1.010***	1.010***	1.011***	1.011***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Multimarket contact of the responder		1.493**	1.493**	1.485**	1.471**	1.493**	1.490**	1.645***	1.546**
		(0.239)	(0.239)	(0.243)	(0.229)	(0.238)	(0.240)	(0.286)	(0.267)
Competitive aggressiveness of the actor		1.005	1.004	1.016	1.004	1.004	1.005	1.011	1.013
		(0.068)	(0.068)	(0.071)	(0.071)	(0.068)	(0.068)	(0.067)	(0.070)
Firm reputation of the responder		1.191	1.191	1.220	1.220	1.191	1.191	1.169	1.218
		(0.247)	(0.247)	(0.244)	(0.239)	(0.247)	(0.247)	(0.233)	(0.233)
CEO tenure of the responder		0.988	0.986	0.970**	0.983	0.987	0.987	0.985	0.972
		(0.022)	(0.033)	(0.013)	(0.014)	(0.022)	(0.020)	(0.016)	(0.021)
CEO duality of the responder		0.539***	0.539***	0.499***	0.521***	0.553***	0.536***	0.542***	0.540***
		(0.089)	(0.089)	(0.081)	(0.080)	(0.094)	(0.093)	(0.092)	(0.098)
Strategic action X CEO tenure of the responder			1.004						1.002
			(0.025)						(0.025)
Market dependence of the responder X CEO tenure of the responder				1.001**					1.001**
				(0.000)					(0.000)
Multimarket contact of the responder X CEO tenure of the responder					0.963**				0.981
					(0.018)				(0.017)
Strategic action X CEO duality of the responder						0.948			0.949
						(0.192)			(0.195)
Market dependence of the responder X CEO duality of the responder							1.000		0.997
							(0.003)		(0.003)
Multimarket contact of the responder X CEO duality of the responder								0.682	0.889
								(0.175)	(0.183)

Results of Cox Proportional Hazards Model for Word Response (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Word action of the attacker	1.226*	1.417**	1.416**	1.422**	1.414**	1.415**	1.418**	1.413**	1.411**
	(0.148)	(0.205)	(0.205)	(0.205)	(0.204)	(0.204)	(0.205)	(0.203)	(0.202)
Firm size of the actor	1.026	1.010	1.010	1.014	1.010	1.010	1.010	1.003	1.009
	(0.049)	(0.050)	(0.049)	(0.051)	(0.050)	(0.050)	(0.049)	(0.051)	(0.052)
Firm reputation of the actor	1.193	1.123	1.123	1.123	1.153	1.123	1.123	1.136	1.142
	(0.157)	(0.136)	(0.136)	(0.137)	(0.134)	(0.136)	(0.136)	(0.134)	(0.134)
Organizational slack of the actor	1.082	1.162	1.164	1.149	1.185	1.163	1.161	1.184	1.187
	(0.287)	(0.326)	(0.328)	(0.318)	(0.334)	(0.326)	(0.330)	(0.336)	(0.341)
Firm size of the responder	1.346***	1.209*	1.210*	1.178*	1.169*	1.209*	1.208*	1.199*	1.168*
	(0.148)	(0.136)	(0.136)	(0.112)	(0.110)	(0.136)	(0.133)	(0.121)	(0.110)
CEO technological background of the responder	1.112	1.206	1.206	1.241	1.274*	1.206	1.206	1.237	1.280*
	(0.220)	(0.186)	(0.187)	(0.180)	(0.184)	(0.186)	(0.185)	(0.178)	(0.190)
CEO age	0.992	0.994	0.994	0.999	0.998	0.994	0.994	0.994	0.999
	(0.014)	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)
Organizational slack of the responder	0.963	0.850	0.850	0.926	0.856	0.849	0.850	0.814	0.893
	(0.409)	(0.370)	(0.370)	(0.414)	(0.388)	(0.370)	(0.371)	(0.359)	(0.409)
Firm visibility of the responder	1.569	1.370	1.371	1.413	1.436	1.371	1.371	1.396	1.443
	(0.500)	(0.406)	(0.406)	(0.403)	(0.406)	(0.407)	(0.405)	(0.396)	(0.402)
Actions by competitors in the past 14 days	0.998	1.030	1.030	1.033	1.026	1.030	1.030	1.027	1.031
	(0.027)	(0.022)	(0.022)	(0.022)	(0.023)	(0.022)	(0.021)	(0.022)	(0.023)
Actions by the responder in the past 14 days	1.335***	1.241***	1.241***	1.251***	1.247***	1.241***	1.241***	1.242***	1.247***
	(0.063)	(0.077)	(0.077)	(0.078)	(0.074)	(0.077)	(0.078)	(0.074)	(0.075)
Words by competitors in the past 14 days	1.072	1.070	1.070	1.075	1.069	1.070	1.070	1.068	1.071
	(0.077)	(0.084)	(0.084)	(0.083)	(0.083)	(0.084)	(0.084)	(0.084)	(0.082)
Words by the responder in the past 14 days	1.209*	1.071	1.071	1.064	1.062	1.070	1.071	1.067	1.055
	(0.139)	(0.137)	(0.136)	(0.136)	(0.139)	(0.137)	(0.137)	(0.137)	(0.137)
χ^2	863	1437	1071	3456	3268	1073	1745	3194	1323

Note: Robust standard errors are in parentheses, clustered by responders. * $p <0.10$; **$p <0.05$; ***$p <0.01$.

APPENDIX C

RESULTS OF MULTINOMIAL LOGIT MODEL FOR ACTION RESPONSE AND WORD
RESPONSE

Results of Multinomial Logit Model for Action Response and Word Response

	Model 1		Model 2		Model 3		Model 4	
	AR	WR	AR	WR	AR	WR	AR	WR
Strategic action	-0.046	0.236***	-0.056	0.237**	-0.043	0.240***	-0.046	0.236***
	(0.049)	(0.092)	(0.050)	(0.092)	(0.049)	(0.092)	(0.049)	(0.092)
Market dependence of the responder	0.017***	0.010***	0.017***	0.010***	0.017***	0.011***	0.017***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Multimarket contact of the responder	-0.024	0.544***	-0.024	0.544***	-0.008	0.544***	-0.019	0.531***
	(0.041)	(0.072)	(0.041)	(0.072)	(0.041)	(0.072)	(0.041)	(0.073)
Competitive aggressiveness of the actor	-0.081***	-0.115**	-0.082***	-0.115**	-0.070**	-0.099**	-0.081***	-0.115**
	(0.027)	(0.048)	(0.027)	(0.048)	(0.027)	(0.049)	(0.027)	(0.048)
Firm reputation of the responder	0.453***	0.094	0.454***	0.094	0.473***	0.127	0.457***	0.120
	(0.055)	(0.094)	(0.055)	(0.094)	(0.056)	(0.094)	(0.055)	(0.094)
CEO tenure of the responder	0.018***	-0.015*	0.014***	-0.017	0.005	-0.036***	0.017***	-0.019**
	(0.004)	(0.008)	(0.005)	(0.011)	(0.005)	(0.010)	(0.004)	(0.008)
CEO duality of the responder	-0.729***	-0.655***	-0.730***	-0.655***	-0.801***	-0.765***	-0.740***	-0.693***
	(0.055)	(0.102)	(0.055)	(0.102)	(0.058)	(0.107)	(0.056)	(0.104)
Strategic action X CEO tenure of the responder			0.008	0.003				
			(0.006)	(0.014)				
Market dependence of the responder X CEO tenure of the responder					0.000***	0.001***		
					(0.000)	(0.000)		
Multimarket contact of the responder X CEO tenure of the responder							-0.006	-0.036***
							(0.005)	(0.010)

Results of Multinomial Logit Model for Action Response and Word Response (Continued)

	Model 1		Model 2		Model 3		Model 4	
	AR	WR	AR	WR	AR	WR	AR	WR
Word action of the attacker	-0.059	0.301***	-0.061	0.301***	-0.055	0.305***	-0.058	0.300***
	(0.061)	(0.106)	(0.061)	(0.106)	(0.061)	(0.106)	(0.061)	(0.106)
Firm size of the actor	-0.049**	-0.003	-0.050**	-0.003	-0.044**	0.000	-0.049**	-0.004
	(0.020)	(0.037)	(0.020)	(0.037)	(0.020)	(0.037)	(0.020)	(0.037)
Firm reputation of the actor	-0.055	0.019	-0.054	0.019	-0.053	0.019	-0.050	0.042
	(0.046)	(0.080)	(0.046)	(0.080)	(0.047)	(0.080)	(0.047)	(0.080)
Organizational slack of the actor	-0.168	0.139	-0.164	0.140	-0.170	0.128	-0.166	0.155
	(0.108)	(0.195)	(0.108)	(0.195)	(0.108)	(0.195)	(0.108)	(0.195)
Firm size of the responder	0.196***	0.192***	0.197***	0.192***	0.161***	0.148***	0.187***	0.157***
	(0.026)	(0.048)	(0.026)	(0.048)	(0.027)	(0.048)	(0.027)	(0.048)
CEO technological background of the responder	0.120**	0.145*	0.120**	0.145*	0.133***	0.181**	0.128***	0.197**
	(0.047)	(0.079)	(0.047)	(0.079)	(0.047)	(0.079)	(0.048)	(0.080)
CEO age	0.006*	-0.008	0.006*	-0.008	0.009***	-0.002	0.007**	-0.005
	(0.003)	(0.006)	(0.003)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)
Firm visibility of the responder	0.464***	0.382***	0.464***	0.382***	0.520***	0.430***	0.478***	0.427***
	(0.062)	(0.101)	(0.062)	(0.101)	(0.063)	(0.100)	(0.063)	(0.101)
Organizational slack of the responder	1.518***	-0.022	1.519***	-0.022	1.675***	0.138	1.542***	-0.007
	(0.120)	(0.245)	(0.120)	(0.245)	(0.124)	(0.250)	(0.122)	(0.248)
Actions by competitors in the past 14 days	-0.105***	-0.079***	-0.105***	-0.079***	-0.101***	-0.075***	-0.105***	-0.082***
	(0.011)	(0.020)	(0.011)	(0.020)	(0.011)	(0.020)	(0.011)	(0.020)
Actions by the responder in the past 14 days	0.114***	0.228***	0.114***	0.228***	0.123***	0.236***	0.116***	0.232***
	(0.030)	(0.055)	(0.030)	(0.055)	(0.030)	(0.055)	(0.030)	(0.055)
Words by competitors in the past 14 days	-0.050*	-0.003	-0.050*	-0.003	-0.045*	0.002	-0.049*	-0.005
	(0.026)	(0.044)	(0.026)	(0.044)	(0.026)	(0.044)	(0.026)	(0.044)
Words by the responder in the past 14 days	0.011	0.056	0.011	0.056	0.000	0.043	0.008	0.043
	(0.065)	(0.110)	(0.065)	(0.110)	(0.065)	(0.111)	(0.065)	(0.111)
χ^2		2455		2457		2496		2469

Results of Multinomial Logit Model for Action Response and Word Response (Continued)

	Model 5		Model 6		Model 7		Model 8	
	AR	WR	AR	WR	AR	WR	AR	WR
Strategic action	-0.041 (0.056)	0.227** (0.099)	-0.046 (0.049)	0.236** (0.092)	-0.046 (0.049)	0.237*** (0.092)	-0.038 (0.056)	0.231** (0.102)
Market dependence of the responder	0.017*** (0.001)	0.010*** (0.001)	0.017*** (0.001)	0.010*** (0.001)	0.017*** (0.001)	0.011*** (0.001)	0.017*** (0.001)	0.012*** (0.002)
Multimarket contact of the responder	-0.024 (0.041)	0.544*** (0.072)	-0.018 (0.042)	0.548*** (0.073)	-0.048 (0.050)	0.639*** (0.083)	-0.048 (0.053)	0.598*** (0.090)
Competitive aggressiveness of the actor	-0.081*** (0.027)	-0.115** (0.048)	-0.083*** (0.027)	-0.116** (0.048)	-0.082*** (0.027)	-0.110** (0.048)	-0.069** (0.027)	-0.102** (0.049)
Firm reputation of the responder	0.453*** (0.055)	0.094 (0.094)	0.452*** (0.055)	0.093 (0.094)	0.459*** (0.056)	0.077 (0.094)	0.488*** (0.057)	0.126 (0.095)
CEO tenure of the responder	0.018*** (0.004)	-0.015* (0.008)	0.019*** (0.004)	-0.014* (0.008)	0.019*** (0.004)	-0.018** (0.008)	0.001 (0.006)	-0.034*** (0.012)
CEO duality of the responder	-0.739*** (0.072)	-0.636*** (0.131)	-0.703*** (0.064)	-0.642*** (0.111)	-0.718*** (0.056)	-0.651*** (0.103)	-0.753*** (0.081)	-0.659*** (0.142)
Strategic action X CEO tenure of the responder							0.010 (0.006)	0.002 (0.014)
Market dependence of the responder X CEO tenure of the responder							0.001*** (0.000)	0.001*** (0.000)
Multimarket contact of the responder X CEO tenure of the responder							0.007 (0.008)	-0.007 (0.014)
Strategic action X CEO duality of the responder	0.019 (0.092)	-0.041 (0.176)					0.051 (0.096)	-0.047 (0.187)
Market dependence of the responder X CEO duality of the responder			-0.001 (0.001)	-0.001 (0.003)			-0.003** (0.001)	-0.005* (0.003)
Multimarket contact of the responder X CEO duality of the responder					0.067 (0.078)	-0.379** (0.156)	0.159 (0.103)	-0.108 (0.198)

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Results of Multinomial Logit Model for Action Response and Word Response (Continued)

	Model 5		Model 6		Model 7		Model 8	
	AR	WR	AR	WR	AR	WR	AR	WR
Word action of the attacker	-0.058	0.301***	-0.059	0.301***	-0.058	0.299***	-0.055	0.299***
	(0.061)	(0.106)	(0.061)	(0.106)	(0.061)	(0.106)	(0.061)	(0.106)
Firm size of the actor	-0.049**	-0.003	-0.050**	-0.004	-0.049**	-0.010	-0.044**	-0.004
	(0.020)	(0.037)	(0.020)	(0.037)	(0.020)	(0.037)	(0.020)	(0.038)
Firm reputation of the actor	-0.055	0.019	-0.056	0.019	-0.058	0.030	-0.069	0.025
	(0.046)	(0.080)	(0.047)	(0.080)	(0.047)	(0.080)	(0.047)	(0.080)
Organizational slack of the actor	-0.168	0.139	-0.165	0.143	-0.172	0.154	-0.170	0.159
	(0.108)	(0.195)	(0.108)	(0.196)	(0.108)	(0.195)	(0.108)	(0.196)
Firm size of the responder	0.196***	0.192***	0.199***	0.194***	0.201***	0.183***	0.173***	0.147***
	(0.026)	(0.048)	(0.026)	(0.048)	(0.026)	(0.047)	(0.027)	(0.048)
CEO technological background of the responder	0.120**	0.145*	0.122**	0.145*	0.118**	0.174**	0.130***	0.204**
	(0.047)	(0.079)	(0.047)	(0.079)	(0.047)	(0.079)	(0.048)	(0.081)
CEO age	0.006*	-0.008	0.006*	-0.008	0.006*	-0.008	0.010***	-0.002
	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.006)	(0.004)	(0.006)
Firm visibility of the responder	0.464***	0.383***	0.461***	0.381***	0.456***	0.401***	0.502***	0.443***
	(0.062)	(0.101)	(0.062)	(0.101)	(0.062)	(0.101)	(0.063)	(0.101)
Organizational slack of the responder	1.518***	-0.022	1.514***	-0.024	1.526***	-0.068	1.737***	0.113
	(0.120)	(0.245)	(0.120)	(0.246)	(0.120)	(0.246)	(0.129)	(0.253)
Actions by competitors in the past 14 days	-0.105***	-0.079***	-0.104***	-0.079***	-0.104***	-0.081***	-0.095***	-0.073***
	(0.011)	(0.020)	(0.011)	(0.020)	(0.011)	(0.020)	(0.012)	(0.020)
Actions by the responder in the past 14 days	0.114***	0.228***	0.114***	0.227***	0.114***	0.228***	0.121***	0.231***
	(0.030)	(0.055)	(0.030)	(0.055)	(0.030)	(0.055)	(0.030)	(0.055)
Words by competitors in the past 14 days	-0.050*	-0.003	-0.050*	-0.003	-0.049*	-0.005	-0.043*	-0.001
	(0.026)	(0.044)	(0.026)	(0.044)	(0.026)	(0.044)	(0.026)	(0.044)
Words by the responder in the past 14 days	0.011	0.056	0.011	0.055	0.012	0.048	-0.001	0.031
	(0.065)	(0.110)	(0.065)	(0.110)	(0.065)	(0.110)	(0.065)	(0.111)
χ^2		2455		2456		2462		2517

Note: AR is action response; WR is word response; N= 35797; standard errors are in parentheses. In the model, standard errors are not clustered because some standard errors are missing after clustering. But the results are similar with the multinomial logit models with clustered standard errors.
* $p <0.10$; **$p <0.05$; ***$p <0.01$.

APPENDIX D

RESULTS OF COX REGRESSIONS WITH MARKET CONCENTRATION

Results of Cox Regressions with Market Concentration

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Market Concentration	4.011**	1.126	1.128	1.114	1.697	1.128	1.135	1.552	1.507
	(2.791)	(0.809)	(0.813)	(0.764)	(1.288)	(0.813)	(0.808)	(1.071)	(1.062)
Word action of the attacker	1.221	1.416**	1.415**	1.421**	1.412**	1.415**	1.417**	1.411**	1.409**
	(0.148)	(0.205)	(0.205)	(0.205)	(0.204)	(0.204)	(0.205)	(0.203)	(0.202)
Firm size of the actor	1.036	1.011	1.011	1.015	1.013	1.011	1.011	1.006	1.012
	(0.049)	(0.051)	(0.051)	(0.052)	(0.052)	(0.051)	(0.050)	(0.052)	(0.053)
Firm reputation of the actor	1.102	1.117	1.117	1.117	1.126	1.117	1.117	1.114	1.121
	(0.124)	(0.128)	(0.128)	(0.131)	(0.131)	(0.127)	(0.128)	(0.130)	(0.132)
Organizational slack of the actor	1.071	1.162	1.164	1.148	1.184	1.162	1.160	1.183	1.187
	(0.296)	(0.327)	(0.329)	(0.320)	(0.337)	(0.327)	(0.332)	(0.339)	(0.344)
Firm size of the responder	1.349***	1.210*	1.210*	1.179*	1.170*	1.210*	1.209*	1.202*	1.168*
	(0.146)	(0.134)	(0.134)	(0.110)	(0.107)	(0.134)	(0.131)	(0.119)	(0.107)
CEO technological background of the responder	1.091	1.204	1.205	1.239	1.271*	1.205	1.205	1.234	1.279*
	(0.215)	(0.180)	(0.181)	(0.175)	(0.181)	(0.181)	(0.179)	(0.176)	(0.188)
CEO age	0.992	0.994	0.994	0.999	0.998	0.994	0.994	0.994	0.999
	(0.014)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Organizational slack of the responder	0.950	0.848	0.849	0.925	0.850	0.848	0.848	0.805	0.883
	(0.403)	(0.366)	(0.366)	(0.409)	(0.380)	(0.366)	(0.367)	(0.349)	(0.396)
Firm visibility of the responder	1.551	1.371	1.372	1.413	1.444	1.372	1.372	1.402	1.449
	(0.477)	(0.408)	(0.408)	(0.404)	(0.408)	(0.409)	(0.406)	(0.397)	(0.404)
Actions by competitors in the past 14 days	1.005	1.030	1.030	1.033	1.028	1.030	1.030	1.029	1.032
	(0.028)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.021)	(0.022)	(0.022)
Actions by the responder in the past 14 days	1.323***	1.240***	1.240***	1.251***	1.245***	1.240***	1.240***	1.240***	1.246***
	(0.071)	(0.080)	(0.080)	(0.080)	(0.078)	(0.080)	(0.080)	(0.077)	(0.077)
Words by competitors in the past 14 days	1.067	1.070	1.069	1.075	1.068	1.069	1.070	1.067	1.070
	(0.078)	(0.085)	(0.085)	(0.084)	(0.083)	(0.085)	(0.084)	(0.084)	(0.082)
Words by the responder in the past 14 days	1.187	1.070	1.070	1.063	1.057	1.069	1.070	1.063	1.052
	(0.127)	(0.135)	(0.134)	(0.134)	(0.135)	(0.135)	(0.135)	(0.134)	(0.134)

Results of Cox Regressions with Market Concentration (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Strategic action		1.344**	1.347**	1.346**	1.341**	1.328*	1.344**	1.344**	1.329*
		(0.183)	(0.185)	(0.184)	(0.184)	(0.208)	(0.183)	(0.184)	(0.215)
Market dependence of the responder		1.010***	1.010***	1.011***	1.010***	1.010***	1.010***	1.011***	1.011***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Multimarket contact of the responder		1.492**	1.492**	1.483**	1.463**	1.491**	1.488**	1.652***	1.544**
		(0.238)	(0.238)	(0.245)	(0.225)	(0.238)	(0.241)	(0.274)	(0.262)
Competitive aggressiveness of the actor		1.003	1.003	1.015	0.999	1.003	1.004	1.007	1.009
		(0.065)	(0.065)	(0.068)	(0.068)	(0.065)	(0.065)	(0.064)	(0.067)
Firm reputation of the responder		1.190	1.190	1.219	1.218	1.190	1.191	1.164	1.215
		(0.247)	(0.247)	(0.244)	(0.235)	(0.247)	(0.248)	(0.231)	(0.230)
CEO tenure of the responder		0.987	0.985	0.970**	0.982	0.987	0.987	0.984	0.972
		(0.022)	(0.033)	(0.014)	(0.014)	(0.022)	(0.020)	(0.016)	(0.022)
CEO duality of the responder		0.542***	0.542***	0.502***	0.532***	0.556***	0.538***	0.553***	0.549***
		(0.085)	(0.085)	(0.078)	(0.077)	(0.096)	(0.091)	(0.089)	(0.098)
Strategic action X CEO tenure of the responder			1.004						1.002
			(0.025)						(0.025)
Market dependence of the responder X CEO tenure of the responder				1.001**					1.000**
				(0.000)					(0.000)
Multimarket contact of the responder X CEO tenure of the responder					0.961**				0.979
					(0.019)				(0.018)
Strategic action X CEO duality of the responder						0.947			0.949
						(0.193)			(0.195)
Market dependence of the responder X CEO duality of the responder							1.000		0.998
							(0.003)		(0.003)
Multimarket contact of the responder X CEO duality of the responder								0.661	0.873
								(0.169)	(0.165)
χ^2	1269	12990	62540	2775	3794	15217	16606	11957	24127

Note: Robust standard errors are in parentheses, clustered by responders. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.