Toward Opening up the Black Box for Market Orientation
The Role of Social Networks inside Firms

PhD thesis

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by

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Preface

My four-and-a-half year apprenticeship at Groningen University was born of a curiosity about the role of social interactions in firm’s marketing strategy. The idea came across me 6 years ago, when I visited the university’s Sociology faculty.

There are all kinds of social interactions between humans. There is no doubt that social interactions bring about and improve human civilizations, without which humans may very likely have remained savages who still dwell in holes. Inside firms, nowadays, an email, a meeting, a talk, or a friendly wink or a casual remark to colleagues, can occur every second. These create conduits for sending important data or for signaling team sentiments, necessary for keeping members of firms working as an integrated whole, while being consistently intelligent to what’s going on inside and outside the corporate boundary.

Curious about these, I started a scientific inquiry into several so-related questions. To feed this urge, my first sacrifice was giving up my position at Fudan University in Shanghai, China, which had endured for a period of eight-and-a-half year, as no compromised negotiation outcome could be reached for me. Also my family did not think it to be a wise move. But, my wife decided to follow me after asking questions that I could not answer very well then: such as, how should I perceive the value of it to my career?

The first seven months in Groningen were challenging tests one after another. My wife, after three weeks’ of cold lonely rainy days, packed up and would like to go to the airport, the very evening when I returned from work. A couple of months later, disappointment at my slowness with the course of Marketing Theory, pounded with much frustration during the first paper revision that went on at the same time, caused a supervisory halt to the submission of my Ph.D. thesis proposal.

Those memorable days made up s starting point of this project, through which, I learned to face my own weaknesses both in person and work. Eventually I composed
four papers with strong supervision under a streak of luck, keeping for the topic I
loved.

Here following are the persons to whom I would like to say “thank you” for
enlivening that part of my life as academia to be.

First, I must thank Professor dr. Peter Verhoef for initiating this project. Without his
effort and keen critiques, I could not improve as scientific researcher. I should thank
Professor dr. Tammo Bijnol in the marketing department, and Dr. Martin Land as
the Ph.D.-coordinator, who helped tremendously with this project.

Particularly, I should thank the current supervision of the project, Professor dr. Roger
Leenders, Professor dr. Wilfred Dolfsmo, and Dr. Thijs Broekhuizen. Roger’s keen
interpretations of research contexts in this thesis not only always sent sparkles to my
sometimes deadening thoughts. I still remember the stories he told about the models
with pictures of daily managerial practices, which helped achieving insights into what
was found from modeling results. I should thank Wilfred, for supporting this project
based on his expertise in network and innovation theories. His contributions to these
four studies are huge. He later served as indeed an able project administrator in most
time after Roger moved to Tilburg University. It was also due to his efforts that Thijs,
an achieved marketing scholar, joined the supervision and helped me a great deal in
learning theoretical development and structuring and revised the third paper almost
sentence by sentence. With their inspirations and steadfast proofreading, I saw what I
could not see before.

I would like to thank other colleagues in the Innovation & Strategy department,
thanks for their encouragement and company. I should also thank colleagues in the
university’s Sociology center: Dr. Christian Steglich, who helped me with difficulties
in statistics. Also Professor dr. Rafael Wittek, I thank him for hosting me as visiting
faculty at the sociology center in 2008. Without this visit, I may never have known
the depth and potential of social network research.

Also thanks to fellow Ph.D. colleagues (in chronological order) who much
enlightened my soul in different ways during this special period of my life: Scott
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I also would like to thank my other friends in Groningen, who have made my life here a lot more enjoyable: Robert Leijendekker and Rui Zhang, Wouter Olthof and Wing Xiang, Harry Smit and Hong, Tatming Cheung and Charlotte Lo, and also my neighbour at planetenlaan, vrouw Kitty, who helped me break into my own kitchen twice as I forgot my own key.

Special acknowledgement to my wife, who supports me as always for all the boring or exciting moments during the past 4 year and 8 month’s time. To my son, who was born in the third year of the Ph.D.-project, thanks for his tears, smiles, giggles, and laughter that delighted me so! To my mother, thanks for her words of comfort every time I called home.

To my father, I owe him a thousand apologies that I could not have been with him in his last moments of life. Much consolation and peace to my father, since no doubt the choice his son made then has been well-rewarded.

Finally, I must thank God for opening my eyes to different worlds!
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CHAPTER 1: INTRODUCTION

MARKET ORIENTATION

Peter Drucker once philosophized that all businesses consist of “only two basic functions: marketing and innovation” (1954, pp. 39–40) with which they create and fulfill customer needs. Building on this customer-centric philosophy, researchers advanced a theory of market orientation (MO) of firms (Kohli and Jaworski 1990; Narver and Slater 1990). MO consists of (1) generation of, (2) dissemination of, and (3) responsiveness to market information (Kohli and Jaworski 1990), mostly at the firm level. Literature posits that by espousing MO, a firm enhances its competence, which leads to superior organizational performance (Day 1994; Slater and Narver 1995). The logic is that a firm’s MO enhances performance by driving a continuous disposition toward meeting customer needs and greater and more effective information use (Han et al. 1998; Kirca et al. 2005).

However, this claim is empirically not completely “well established” (Slater and Narver 2000; Homburg 2009). Current MO literature shows mixed results concerning the link between a firm-level MO and firm-level performance. Over the past 20 years, scholars have reported a direct link between a firm’s MO and its profits (e.g., Helfert 2008; Ruekert 1992; Slater and Narver 1990), whereas others have found either an indirect link (Elinger et al. 2006) or a weak direct link (Silva et al. 2007). Some studies have shown mixed results that include both direct and indirect links (e.g., Greenley 1995; Homburg and Pfessor 2000; Kohli and Jaworski 1993). In addition, several researchers have reported non-significant or negative effects (e.g., Agarwal et al. 2003; Bhuian 1997; Sandvik and Sandvik 2003). These mixed
empirical findings might have resulted from an overwhelming focus on the direct link between firm-level MO efforts and firm-level performance outcomes in previous research, having neglected possible critical intermediate or moderating constructs. One important factor is the market-oriented behaviors of individual employees; their behaviors must embody their firm’s commitment to MO before the MO can contribute to the firm’s profitability (Ellis 2006).

According to previous research (Schlosser and McNaughton 2007), individual market-oriented behaviors include (1) the active acquisition of market information, (2) the active dissemination of this information, and (3) employees’ active involvement in developing innovative ways to act on this information. For a firm to implement an MO, it is important to obtain an individual-level MO because the firm’s management espousing an MO at the firm level alone cannot readily lead to firm-level performance outcomes: firm-level MO should be implemented through employees who practice MO in their own behaviors. A firms’ commitment to MO is unlikely to yield a profit by itself, unless it is effectively practiced by employees (Kohli and Jaworski 1990; Slater and Narver 1990). Although many organizations have automated systems for collective acquisition of and response to market information, these specific actions must be carried out by individual employees on a day-to-day basis.

When firms espouse an MO, employees behave with a “continuous and proactive disposition” (Kirca et al. 2005, p. 25) to adapt their products and services to customer needs and market trends (Kohli and Jaworski 1990). This adaptation requires employees to gather and share market information proactively and devise innovative responses to (new) customer needs or changes in the marketplace. Literature has shown that such innovative potential is strongly rooted in employee
behavior (Leenders et al. 2007; Dolfsma et al. 2008; Baer et al. 2010, 2014). Without this behavioral focus by the firm’s individual employees, the firm’s MO effort at an aggregate level is unlikely to yield firm-level performance improvement. Therefore, effective implementation of a firm-level MO requires the firm’s employees to conscientiously engage in effective MO behaviors. In other words, MO has to be practiced, lived, and performed by employees individually and in concert with each other before firms can truly reap benefits from a market orientation.

Surprisingly, research on the role of individual-level MOs is largely missing from the MO literature (see Table 1). Previously, a firm’s MO has generally been studied as an aggregate-firm or group-level construct. Prior studies have tended to focus on the firm’s overall/general tendency to share information—implicitly assuming that sharing occurs evenly and effectively throughout the organization. In effect, many studies consider MO as both a firm-level strategy and as part of a desirable culture, without explicitly defining what actually happens on the workfloor. In this thesis, we focus on how individual-level market-oriented behavior is affected by a firm’s management’s commitment to MO and how individual-level market-oriented behavior results in enhanced performance outcomes at the employee level, as moderated by social interactions among them, eventually leading to enhanced firm performance.

Because such an individual MO behavior primarily concerns the process of sharing market information with colleagues, the characteristics of such information interactions provide a crucial context for a better understanding of MO implementation and execution. Social network analysis (SNA) is a scientific field that involves studying the characteristics of people’s interactions. In previous research, SNA has consistently shown that employee’s behaviors tend to be strongly affected
by the characteristics of the social networks of which these employees are members (Borgatti 2009; Brass et al. 2004). To further understand the role of individual employees’ market-oriented behavior, converting a firm-level MO effort into firm performance, it is necessary to account for the effects of workplace social networks. SNA views behavior as “embedded” in interactive relationships that “provide opportunities for and constraints on behavior” (Brass et al. 2004, p. 795). Social interactions affect both the possibility and efficacy of the market-oriented behavior of employees (cf. Leenders et al. 2007). In other words, social interactions are both an antecedent to market-oriented behavior and a moderator of its effect on performance.

Employees’ intrafirm networks. The structure of the interaction network between employees affects the effectiveness and efficiency of executing information transfer (Smit-Bakker 2010) because it affects the information sharing and gathering (Homburg et al. 2009). As we have mentioned, we are interested both in the extent to which employees engage in market-oriented behavior individually and the extent to which such behavior is achieved jointly. With respect to individual actions of information gathering, sharing, and responding, the SNA literature suggests that different network characteristics can have an important role. For example, the network literature suggests that the more central an individual employee is in the overall employee network, the easier it is for him or her to disseminate information to other employees. Similarly, employees with varied external ties should be able to gather more information than employees with only a few ties. Such employees can be more easily and effectively encouraged by management efforts to engage in market-oriented behavior and, conceivably, contribute more to firm-level performance. Similarly, if a firm possesses a highly active or dense network of social interactions for advice giving and seeking among employees, market-oriented firm performance
will be more pronounced in the long run. Such influences are important for MO to be sustainable. We deal with this topic in depth in Chapter 3.

In summary, MO is still largely a black box. Current MO literature lacks examples of how to translate a firm-level MO into increased firm performance as it lacks an understanding of the role of employees’ intrafirm network interactions in this process. Such networks, which Kohli and Jaworski (1990) conceptualize as an important common basis for MO, have not been addressed in MO literature to date.

AN OVERVIEW OF MO RESEARCH

To assess the theoretical impact of this thesis on current MO literature, it is necessary to review the studies that link MO to performance. As Kohli and Jaworski (1996) point out, prior studies adopt two basic approaches: top-down or bottom-up. Top enablers include market environments (Kohli and Jaworski 1990), institutional differences (Kirca et al. 2010), and industrial differences (Greenly 1995). At the middle level, previous research has investigated mainly strategy and firm-level efforts led by senior managers. Scholars have also enlisted and studied bottom-level enablers—individual employee characteristics such as managers’ sense of risk avoidance, employee training, and customer knowledge (Kohli and Jaworski 1990; Ruekert 1994; Homburg et al. 2009). The following presents an overview of prior research addressing the link between MO and performance enablers from top to bottom levels.
Market
At early stages of MO theory development, scholars were already aware of the differences in MO-to-performance-link hypotheses in markets across diverse industries, cultures, and countries. Kohli and Jaworski (1990) and Greenly (1995) found that the effectiveness of the link depends on industrial differences. Deshpandé and Farley (2000) conducted a cross-country study of the link of MO to performance. The impact of organizational culture is supported at the firm level. However, this difference is not significant at the country and market levels, which are set up according to western and eastern firms, such as in Germany, the United States, the United Kingdom, and France, and as opposed to those in Japan. Homburg and Pflessor (2000), who built a scale for firm-level “MO enhancing culture” and found a moderating effect of this construct, especially in “dynamic markets,” followed up on this idea. Kirca and his colleagues (2010) re-examined this issue in a recent article. Their conclusion generalized the market differences across countries not only in terms of culture but also in terms of specificities such as legal institutions. A meta-analysis by Viera (2010) replicates the positive link between MO and performance in a specific country setting: Brazil. In summary, previous literature on the link between MO and performance describes the mostly moderating effects of industrial, cultural, institutional, and market differences and their positive impacts.

Firm and Strategy
Scholars have also investigated the influences of firm strategy on the link. An early study on this issue points out the influence of different strategies on the MO-to-performance link that results in departmental communication patterns (Ruekert 1987). Following this tenet, Ruekert has further studied strategic firm-level enablers,
including employee-level training and MO attitudes (1992). However, how the process of strategic implementation of MO happens at the individual level remains unknown. Thus, both practitioners and theorists of MO cannot explain definitively how training and employee attitudes toward MO can transform into firm-level performance. Kohli and Jaworski (1990) suggest a series of managerial instruments that may stimulate MO. These include top management focus on MO, top management risk aversion, interdepartmental conflict, degree of formalization, centralization, departmentalization, and MO-based evaluation and reward systems. However, later studies have found that only a few of these elements provide empirical support for significant relationships with MO. In a meta-analysis, Kirca and his colleagues (2005) have found top-management focus and reward systems to be most prominent in MO implementation. Rueckert (1992) also suggests that an MO reward system is an important enabler of MO. Rueckert also adds recruitment and training as enablers (cf. Raaij et al. 2008). We return to this issue in Chapter 2.

A review of “internal antecedents” to MO will help us better understand the focal predictors as organizational instruments for MO in the current model (Raaij et al. 2008). It is obvious that rewards and top management are the two main instruments of internal antecedents (Raaij et al. 2008; Harris and Piercy 1999) because firms use them most often to leverage the level of MO behavior. It is noteworthy that most studies having an internal MO enabler perspective concentrate on the organizational level. Only a few (Siguaw et al. 1998; Voss and Voss 2000; Homburg et al. 2009; and Lam et al. 2010) concentrate on the lower levels of aggregation (e.g., the work floor).
**Employee MO**

Previous studies have also investigated how employee MO contributes to performance outcomes. Voss and Voss (2000) have found that customer orientation at the individual employee level relates negatively to firm-level performance. Lam and his colleagues (2010), however, in their recent study have found that a key issue exists in how information is transferred through “envoys” by means of network interactions. Assuming that employees with a high level of MO contribute more to firm performance than those who do not, this is the first work that has hinted empirically at the importance of transferring information through interaction networks within firms—the *intrafirm network*—just scratching the surface of the black box.

In summary, it is necessary to open the black box of MO. Obviously, there has not been enough study of the role of individual MO and intrafirm network characteristics, or previous literature has overlooked them. Unless further studies develop insights into these two issues, we will not be able to fully understand the transforming process from firm MO into actual performance outcomes. Thus, we suggest that the intrafirm networks of employees not only (1) affect employee market-oriented behavior but also (2) influence the efficacy of this behavior as it contributes to firm performance (Obstfeld 2005). In other words, intrafirm social networks may both act as one of many antecedents to employee market-oriented behavior and moderate the effect of this behavior on firm performance.
RESEARCH QUESTION

Following calls from recent MO studies (Lam et al. 2010; Homburg et al. 2009), the research question for this study is:

How do intrafirm social networks of employees produce or help produce MO and, consequently, improve firm performance?

As the central issue of this thesis, this question contributes a completely new agenda to current MO research (see Table 1). This study shows that employees’ individual market-oriented behaviors have an important role in creating a link between a firm’s MO effort and better firm performance. This role is significantly moderated by the employees’ intrafirm network interactions (evidence sought and found in all the four empirical chapters in this book). Accordingly, this thesis proposes four research questions addressing the effects of intrafirm social networks on MO (the conceptual model in Figure 1 illustrates these questions in detail):

1. How does an employee intrafirm network affect the link between management’s efforts to implement MO in the firm and employees’ resulting market-oriented behaviors (Chapter 2)?

2. How does an employee intrafirm network affect the link between MO duration and firm performance (Chapter 3)?

3. How does the employee intrafirm network affect the link of individual-level MO behavior and employees’ innovative performance (Chapter 4)?

This study also extends the understanding of the mechanism of intrafirm social interaction to an emerging marketing concept: mindful marketing. Based on the concept of mindful management, information sharing and response is the central issue (Malhotra, Lee, and Uslay 2012), so as to “respond rapidly and effectively to
potentially diverse and changing set of stimuli” in the market (Ndubisi 2012). Thus, this thesis also addresses the following sub-question:

4. How does the employee intrafirm network help individual employees develop better mindful marketing (Chapter 5)?

We have developed these research questions into four substantive and separate chapters, but we show the relationships among them (see Figure 1).

SCIENTIFIC CONTRIBUTIONS

The aim of this thesis is to contribute to our understanding of how and when a firm’s MO has a positive or negative effect on firm performance. This understanding can create relevant scientific insights. We take a novel approach, examining employees’ social interactions in which MO behavior is embedded. This approach helps explain how such interactions can increase a firm’s MO efforts, which affect performance outcomes. This thesis explores employees’ knowledge-generating and sharing behaviors, which both Management Science (MS 1994) and the Marketing Science Institute (MSI 1994) have touted as a critical research domain. MSI has recently set the study of social interaction management as one of the priorities for the field of marketing science (Van de Bulte and Wuyts 2006). MSI has also proposed both innovation and marketing strategy research with new perspectives as a main research priority for 2008 through 2010. Dominique Hanssen, former director of MSI, referred to intrafirm networks as one of the most promising research areas for marketing scientists (MSI 2006). By exploring the role of organizational intrafirm networks as a critical driver of employee market-oriented behavior and of the performance consequences of that behavior, this study can make highly relevant contributions to both marketing and management scholarship.
Managerial Relevance

This thesis also develops a new outlook for managers who are busy with MO implementation in real business settings. Our aim is that they benefit from specific efforts to cultivate a good intrafirm network among employees or even directly intervene in such a process.

Specifically, managers may intervene to ensure that employees are well connected with others locally if they want to have good results from their MO managerial efforts. For example, managers can help employees get advice on daily work-related issues right on the spot. They can achieve this goal by creating occasions for employees to build relationships with each other. If they don’t, it is likely, according to this study, that managerial efforts will simply backfire or be wasted. In contrast, if managers try to signal to their employees more strongly how important it is to have the MO strategy executed, managers should be careful about tendencies of over-development of friendship networks among them. Managers must develop a keen sense of which types of interactions will be good for which sorts of managerial instruments when pushing for a higher MO and better performance outcomes. This study contributes to such practice by explicitly providing instructions for using such mechanisms. In summary, managers who take a balanced approach to intrafirm network intervention and encourage employees may enjoy a higher level of MO practice and result.
Table 1: Overview of Studies on Market Orientation-Performance Link

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Individual traits</th>
<th>MO rewards</th>
<th>Org. structure</th>
<th>MO training</th>
<th>Top mgt. focus</th>
<th>Intrafirm networks</th>
<th>Link to Performance</th>
<th>Unit of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohli &amp; Jaworski</td>
<td>1990</td>
<td>√</td>
<td>√</td>
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<td>Naver &amp; Slater</td>
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<td>Ruekert</td>
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<tr>
<td>Jaworski &amp; Kohli</td>
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<td>Greenley</td>
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<td>Bhajan</td>
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<td>Harris &amp; Piercy</td>
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<td>+</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Harris &amp; Ogbonna</td>
<td>2001</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>+</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Voss &amp; Voss</td>
<td>2000</td>
<td>√</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>√</td>
<td>NA</td>
<td>-</td>
<td>√</td>
</tr>
</tbody>
</table>

Note: NA = Not Applicable

Legend: √ = Present, + = Positive, - = Negative, Weak+ = Weakly Positive, √ = Strongly Positive
| Study               | Year | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|--------------------|------|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|
| Agarwal et al.     | 2005 | √  | NA | NA | NA | NA | NA | NA | + | + | + | + | + | + | + | + | + | + | + | + |
| Sandvik & Sandvik  | 2003 | √  | NA | NA | NA | NA | NA | NA | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Donovan et al.     | 2004 | √  | NA | NA | NA | NA | NA | NA | + | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cano et al.*       | 2004 | NA | NA | NA | NA | NA | NA | NA | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Farrell et al.     | 2005 | √  | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Kicca et al.*      | 2005 | √  | √  | √  | √  | √  | √  | √  | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Ellis*             | 2006 | NA | NA | NA | NA | NA | NA | NA | + | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Franke & Park*     | 2006 | √  | NA | NA | NA | NA | NA | NA | - | + | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Gebhardt et al.    | 2006 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Grinstein et al.   | 2006 | NA | NA | NA | NA | NA | NA | NA | √ | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Elvinger et al.    | 2006 | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA | √  | NA |
| Silva et al.       | 2007 | NA | NA | NA | NA | NA | NA | NA | Weak | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Schlosser & McNaughton | 2007 | √  | NA | √  | NA | NA | NA | NA | - | NA | √  | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Helfert et al.     | 2008 | √  | NA | NA | NA | NA | NA | NA | + | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Homburg et al.     | 2009 | √  | NA | NA | √  | NA | NA | NA | NA | NA | + | √  | NA | NA | NA | NA | NA | NA | NA | NA |
| Lam et al.         | 2010 | √  | NA | √  | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Kicca et al.       | 2010 | NA | NA | NA | NA | NA | NA | NA | √  | NA | + | NA | √  | NA | NA | NA | NA | NA | NA | NA |
| Viera*             | 2010 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Kumar et al.       | 2011 | NA | NA | NA | NA | NA | NA | NA | √  | NA | + | NA | √  | NA | NA | NA | NA | NA | NA | NA |
| This thesis        | 2013 | √  | √  | √  | √  | √  | √  | √  | + | + | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  |

* = meta-analysis, “√” = included, “NA” = not included
“+” = positive causal link supported, “-” = negative causal link supported, “0” = causal link not supported
THESIS CONTENTS AND CONCEPTUAL MODEL

Most studies focus on the question of how firm-level MO efforts affect firm performance directly (taking firm idiosyncrasies such as size and business categories into account as covariates). In the current manuscript, we conducted four empirical studies in this research context (see Figure 1). First, we considered how intrafirm networks moderate the effects of the management instruments commonly used to implement MO on employee MO behaviors (Chapter 2)—defined as generating, sharing, and responding to market information by individual employees on the firm’s work floor (Schlosser and McNaughton 2007).

FIGURE 1: Conceptual Framework of This Study
Second, we inquired whether and how a firm’s overall intrafirm network interactions moderate the relationship between MO duration and firm performance, here measured by customer loyalty (Kirca et al. 2005). Chapter 3 documents this study. Third, we studied how intrafirm interaction networks moderate the transformational process that turns individual employees’ MO behaviors into innovative performance (Chapter 4). Table 2 summarizes these chapters.

These three independent but interrelated inquiries serve as the core of this thesis and provide multifaceted insight into the MO adoption process at the individual level, in which we find the central role of intrafirm networks. In addition, we extended this research context so we could examine the related concept of “mindful marketing” and how to use it to leverage intrafirm social network influences. Mindful marketing is the subject of Chapter 5, an emerging topic closely related to MO.

**TABLE 2: Classification of Empirical Chapters**

These three independent but interrelated inquiries serve as the core of this thesis and provide multifaceted insight into the MO adoption process at the individual level, in which we find the central role of intrafirm networks.

<table>
<thead>
<tr>
<th>Intrafirm network characteristics</th>
<th>Firm level</th>
<th>Employee level</th>
<th>MO managerial instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 2</td>
<td>√</td>
<td>√</td>
<td>MO top-management focus &amp; MO-based reward system</td>
</tr>
<tr>
<td>Chapter 3</td>
<td>√</td>
<td></td>
<td>MO duration</td>
</tr>
<tr>
<td>Chapter 4</td>
<td>√</td>
<td>√</td>
<td>MO commitment, training</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>√</td>
<td></td>
<td>MO top management focus, MO-based reward system</td>
</tr>
</tbody>
</table>
In addition, we extended this research context so we could examine the fourth study: mindful marketing and how to use it to leverage intrafirm social network influences. Mindful marketing is the subject of Chapter 5, an emerging topic closely related to MO. Along with Table 2, the following sections sum up the research context for each of the four chapters.

Chapter 2: Does Management Really Matter?
The Influence of Employee Networks on Managerial Instrument Effectiveness in Market Orientation Implementation

Without a clear understanding of employee MO behavior, the theory of MO “will remain perplexing to theorists and continue to be elusive for practitioners” (Harris 2000, p.619). Firms’ MO black box must be opened by studying what determines employee MO behavior (cf. Lam et al.2010; Ruekert 1992; Schlosser and McNaughton 2006; Slater and Narver 1995). At the firm level, prior studies have shown that to increase MO, managers can reward employees for MO and show them strong managerial commitment. They have also shown that these are the most effective managerial instruments (Van Raaij and Stahoeest 2008; Kirca et al. 2005; Kohli and Jaworski 1990). However, do employees respond uniformly to the managerial instruments? In Chapter 2, we investigate this research question as the starting point of this thesis.
Chapter 3: A Knowledge Reservoir as Time Goes By

The Role of an Intrafirm Network in Sustaining Competitive Advantage of Market Orientation

Despite the large body of literature that confirms MO’s positive impact on firm performance (Kirca, Jayachandran, and Bearden 2005; Homburg and Pflesser 2000), only a few studies address the long-term benefits of MO (cf. Kumar et al. 2011; Gebhardt et al. 2006; Slater and Narver 1995). Previous research has offered us a hint: Having an MO can yield lasting benefits through an inherent intrafirm structure, which we use in this study to refer to firms’ inherent social structures (Slater and Narver 1995) that favor organizational learning about customer knowledge (Kohli and Jaworski 1990). Employees must acquire such knowledge through day-to-day social interactions (Hitt, Bierman, Shimizu, and Kochhar 2001). So far, no study has explicitly explored the role of social interactions in this process.

Chapter 4: How to Transform Service Employees’ Market Orientation Behaviors into Innovation? Understanding the Role of Intrafirm Network Centrality

Although intrafirm interactions provide the foundation for service employees to transform their MO behaviors into innovations, there has not been much research on how the positions of employees within intrafirm networks affect their innovative outcomes. MO relies on individual employees generating and using knowledge about customer needs through their interactions within organizations (Desphandé and Webster 1989; Kohli and Jaworski 1990; Narver and Slater 1993; Homburg et al. 2009). Such interactions yield innovative outcomes (Han et al. 1998). To maintain an
MO, it is necessary to develop and circulate customer- and market-related information through intrafirm networks of “open communication channels” (Kohli and Jaworski 1990, pp. 9–10); this information appears to enhance employee innovative behavior.

Such insights lead to the implementation of new solutions. Intrafirm interactions are therefore central to understanding how MO behaviors (Narver and Slater, 1990) translate into innovative outcomes (Ibarra et al. 2005).

Chapter 5: Realizing Mindful Marketing by Using Intrafirm Networks: An Exploratory Study

Individual mindfulness reflects the ability “to focus one’s attention on the concrete aspects of one’s behavior, thereby eliminating the abstract, deliberative, high-level self-thoughts that can interfere with enacting automatic and complex behaviors” (Leary et al. 2006, p. 1827). Chapter 5’s aim is to test an empirical linkage of the synergistic effect between both formal and informal organizational structures to individual-level mindful marketing practice. We identify two elements: service employees’ shared cross-functional ties and firm-level network interaction segmentation.
CHAPTER 2: DOES MANAGEMENT REALLY MATTER?

The Influence of Employee Networks on Managerial Instrument Effectiveness in
Market Orientation Implementation

1 Presented at 2011 AcM Annual Conference and collected in the conference proceedings, San Diego, USA, August, 2011. Thanks also to IACMR 2012 workshop for the comments and suggestions.
ABSTRACT

Employees’ individual market-oriented behavior (IMOB) is known to contribute significantly to firm performance. What drives IMOB is not well known yet, however. What is known is that IMOB consists of three parts: information generation, sharing, and response. These behaviors all involve social interaction. This study finds that social interactions between employees are a main driver for MO. MO literature emphasizes not just the accumulation of knowledge but also its diffusion. MO knowledge should flow into and out of employees. MO literature has ignored this element and has in large part black boxed IMOB. Management can contribute significantly to this process by using the measures at its disposal—mainly by showing a consistent commitment to MO.
INTRODUCTION

"Without a clear understanding of employee MO, this theory will remain perplexing to theorists and continue to be elusive for practitioners." (Harris 2000, p.619)

Market orientation (MO), a strategic concept often seen as a source of sustainable competitive advantage, has been at the core of the marketing field since the early 1990s (Kumar et al. 2011; Bell et al. 2010; Briggs and Grisaffe 2010; Ferrell et al. 2010; Homburg et al. 2009; Hult 2011; Ingenbleek et al. 2010; Verhoef and Leeflang 2009). Market-oriented firms “seek to understand customers’ expressed and latent needs, and develop superior solutions to those needs” (Slater and Narver 1999, p. 1165). A firm’s MO builds on three dimensions: the organization-wide acquisition, dissemination, and response to market intelligence (Jaworski and Kohli 1993). Over the last quarter of a decade, there have been hundreds of academic articles about the effects of MO on firm performance. Many studies show that having MO is beneficial to performance (Van Raaij and Stoelhorst 2008; Kirca et al. 2005; Kohli and Jaworski 1990; Ruekert 1992) and that a lack of MO is a predictor of poor performance or even the demise of well-established companies (Kumar et al. 2011). Although many firms have automated systems that collect some market information, an effective MO culture can be established only as a result of the active MO behavior of employees on the work floor. Only when the firm’s employees are active in creating, sharing, and responding to firm-relevant market information—of course, depending on their positions in the firm—can the firm really be market oriented. MO is a strategy that must be embraced by everyone in the firm (Van Raaij and Stoelhorst 2008)
(especially the front-line employees who interact with customers) and can hardly be effectively implemented by the mere signature of a CEO on a firm-level strategy document. In other words, an effective MO is really an employee-level process rather than a strategy or culture. Moreover, understanding MO in a firm requires understanding how employees live out the strategy on a day-to-day basis as they meet with and talk with customers on the phone, fulfill orders, deal with complaints, design new products and services, and keep their colleagues abreast with fresh market information.

Considering MO as an employee-level process (thus internal to the firm), it is remarkable that the lion’s share of MO literature has focused on firm-level or between-firm analysis (Schlosser and McNaughton 2007), with an emphasis on organizational-level determinants of how market oriented a firm should be. There has been little individual-level research exploring how top management can diffuse MO to each organizational member and across organizational levels through social interactions (Lam et al. 2010, p. 61). Only a small amount of research focuses on the implementation of MO that accounts for the influences of social interactions, despite Kohli and Jaworski’s (1990) argument that MO must occur through “open channels of communications” for such interactions among personnel on a daily basis. Individual-level participation and social interactions are both indispensable for strategic implementation of MO (Lam et al. 2010; Van Raaij and Stoelhorst 2008; Hartline and Ferrell 1993; Ruekert 1992; Kohli and Jaworski 1990).

Most studies of MO implementation concentrate on top management’s actions to encourage a firm’s employees to accept it. However, there are a few exceptions (cf. Lam et al. 2010; Schlosser and McNaughton 2007; Baker and Sinkula 1999; Hartline
and Ferrell 1993). The management instrument with the strongest effect on the adoption of MO-related behavior has been reported to be the commitment of the firm’s top management to MO (Kirca et al. 2005). A second often-reported managerial tool is offering reward systems that use market-oriented behaviors as metrics to reward employees, which motivate employee actions that enhance the MO (Ruekert 1992). Some meta-analyses of the antecedents of MO report that reward systems appear to be another strong predictor of a firm-level MO (Van Raaij and Stoelhorst 2008; Kirca et al. 2005) in addition to management commitment.

In our study, we take these findings as a starting point and try to determine whether such management instruments have a positive effect on the MO-related behavior of all employees. We address this question from a social network point of view because MO literature emphasizes the importance of social interactions (Hartline and Ferrell 1993). For an individual employee, MO includes actively creating and sharing information, making sense of this information, and devising appropriate responses (Kohli and Jaworski 1990). In essence, MO is a social network process (Lam et al. 2010): it is impossible for employees to share information without being connected to others (Lam et al. 2010). Likewise, making sense of market information is often done most effectively when there are others who can act as a sounding board, offer additional insight, or simply provide a safe and supportive setting in which to try new approaches. In other words, one’s social contacts may constrain or support one’s ability and willingness to display individual MO-related behavior. Employees in unfavorable network positions, because of a lack of social ties, may not be inspired by reward systems or may simply be unable to increase their individual MO, even if they wanted to. Therefore, this study investigates which employees are more likely to
increase their MO behavior as a result of top management commitment to MO or MO-based reward systems and which employees will require a different approach if their MO behavior is to be enhanced.

We contend that management commitment and reward systems may indeed stimulate MO at an aggregate, consolidated firm level, but this does not mean that everyone will adopt MO behavior equally (cf. Schlosser and McNaughton 2007, p. 235). There may be specific groups of employees who will be far less receptive to these management instruments than others. In particular, we consider two characteristics of the employees’ social interactions: the extent to which employees are locally connected (for example, within a work group) versus the extent to which they are connected globally (that is, throughout the firm). We argue that the effects of management commitment and reward systems are moderated by these network positions. The effect of these management instruments on the generation and sharing of information is much more generic and straightforward than their effect on the actual response behavior of employees (which is what ultimately creates the firm’s competitive advantage).

This study is among the first to show how active social interactions among employees in a firm enhance or constrain the effectiveness of management instruments meant to stimulate MO behavior. We test our hypotheses using a multisource data set that includes 60 service firms with 1175 nested individuals.
THEORY AND HYPOTHESES

We first argue for the main effects of top management commitment and reward systems. Because literature has already described these effects extensively, we keep this section brief. After that, we develop hypotheses about how the social network position of an employee (in terms of local or global connectedness) affects how successful each of the management instruments will be in making that employee display higher levels of MO. The dependent variable in this study is the market-oriented behavior of individual employees (IMOB). In accordance with recent and early literature (Lam et al. 2010; Schlosser and McNaughton 2009; Noble et al. 2002; Voss and Voss 2000; Saxe and Weitz 1982), we define IMOB as an employee’s practice of integrating customer preferences, competitor intelligence, and product knowledge into the process of creating and delivering superior value to customers. This practice corresponds to three types of market-oriented behavior: generating customer and market information, sharing customer and market information, and developing suitable responses to this information so as to increase customer value. Accordingly, we develop our hypotheses separately for each of these three IMOB dimensions.

Managerial Commitment to MO and MO-Based Reward Systems

Kohli and Jaworski (1990) suggest various managerial instruments that stimulate IMOB in firms, chief among which are a management commitment to MO and a system to reward MO behavior (Kirca et al. 2005; Ruekert 1992; Van Raaij and Stoelhorst 2008). In their meta-analysis, Kirca et al. (2005) find top management to
MO the most important instrument to stimulate IMOB. In their review of MO literature, Van Raaij and Stoelhorst (2008) refer to these instruments as “internal antecedents” and argue that they are directly related to the successful implementation of MO in firms.

**FIGURE 1: Antecedents of MO in Literature**

<table>
<thead>
<tr>
<th>MO Enablers</th>
<th>Authors</th>
<th>Year</th>
<th>Indiv. Traits</th>
<th>MO Reward System</th>
<th>Top Mgmt. Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kohli &amp; Jaworski</td>
<td>1990</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Narver &amp; Slater</td>
<td>1990</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Ruekert</td>
<td>1992</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jaworski &amp; Kohli</td>
<td>1993</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Greenley</td>
<td>1995</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bhuian</td>
<td>1997</td>
<td>✓</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Han et al.</td>
<td>1998</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Kumar et al.</td>
<td>1998</td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>Siguaw et al.</td>
<td>1998</td>
<td>✓</td>
<td></td>
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<tr>
<td></td>
<td>Harris &amp; Piercy</td>
<td>1999</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deshpandé &amp; Farley</td>
<td>2000</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hornburg &amp; Pfessler</td>
<td>2000</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harris &amp; Ogbonna</td>
<td>2001</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voss &amp; Voss</td>
<td>2000</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harrison-Walker</td>
<td>2001</td>
<td>✓</td>
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<td></td>
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<tr>
<td></td>
<td>Agarwal et al.</td>
<td>2003</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td></td>
<td>Sandvik &amp; Sandvik</td>
<td>2003</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Donavan et al.</td>
<td>2004</td>
<td>✓</td>
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<tr>
<td></td>
<td>Farrell et al.</td>
<td>2005</td>
<td>✓</td>
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<tr>
<td></td>
<td>Kirca et al.</td>
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<td>✓</td>
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<td>✓</td>
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<tr>
<td></td>
<td>Gebhardt et al.</td>
<td>2006</td>
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<tr>
<td></td>
<td>Ellinger et al.</td>
<td>2006</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Schlosser &amp; McNaughton</td>
<td>2007</td>
<td>✓</td>
<td></td>
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<tr>
<td></td>
<td>Helfert et al.</td>
<td>2008</td>
<td>✓</td>
<td></td>
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<tr>
<td></td>
<td>Hornburg et al.</td>
<td>2009</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Lam et al</td>
<td>2010</td>
<td>✓</td>
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</tbody>
</table>

1 Studies that focus on individual characteristics, such as education and psychological traits
In Figure 1 we provide an overview of the antecedents of MO as they have been studied in MO literature. Such studies of firms’ internal antecedents have, unfortunately, mostly been at the firm level (exceptions include Sigauw et al. [1998]; Voss and Voss [2000]; Homburg et al. [2009]; and Lam et al. [2010]). Kohli and Jaworski (1990, p. 7) argue that top managers’ commitment to MO is “one of the most important factors in fostering a marketing orientation.” “Signals” from the firm’s top management are meant to nurture a state of mind and a sense of direction among employees in support of MO and accompanying behavior (Kohli and Jaworski 1990). A commitment to MO caters to employees’ intrinsic motivation to do well (Davis et al. 1992). In addition, employees often see members of top management as role models whose behavior represents the type of behavior that is expected and appreciated in the organization. By following their management’s lead, employees thus do what is expected of them and what is important to their leaders (Davis et al. 1992; Kohli and Jaworski 1990). The commitment of top managers to MO has been argued to be “an essential prerequisite” (Jaworski and Kohli 1993) to encourage employees to generate and share appropriate and high-quality information and to respond accordingly.

Whereas employees’ motivation to imitate the MO-appropriate behavior of top management may be largely intrinsic, their response to reward systems is mainly extrinsic (Davis et al. 1992). Reward systems stimulate employees’ short-term MO responses in a manner consistent with the rewarded behavior (Hopwood 1974; Lawler and Rhode 1976; Podsakoff et al. 2010). The more meaningful the relationship between the reward and the behavior for employees (e.g., by directly affecting their financial compensation or by increasing their chances for promotion), the more likely
it will trigger the prompted behavior. In addition to offering meaningful rewards, reward systems can offer measurable clarity in terms of what management expects of employees; they can clearly show what the employees must do to satisfy management. Reward systems based on rewarding consistent IMOB can stimulate employees to adopt MO behavior in their daily practice (Kohli and Jaworski 1990; Ruekert 1992) even if they are merely trying to reap the rewards. Psychological theory suggests that such behavior eventually becomes etched in employees’ behavioral patterns and that IMOB consequently becomes an automatic behavior that persists even in the absence of continued rewards (Deci et al. 1999; Davis et al. 1992).

Table 1 summarizes the main characteristics of the two management instruments. When top management uses commitment and reward systems well, it can target all three IMOB dimensions: generation of, dissemination of, and response to market information. It is technically possible to create systems that reward each of these behaviors, but it is probably easier to reward generation and dissemination than to reward response.
**TABLE 1: Characteristics of Management Commitment and Reward Systems**

<table>
<thead>
<tr>
<th>Management commitment</th>
<th>Reward systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stimulates internal motivation by focus on commitment and pride</td>
<td>• Stimulates external motivation by focus on formal reward by the firm</td>
</tr>
<tr>
<td>• Stimulates quality of information generated or in response to profound information and deeper responses based on motivation</td>
<td>• Stimulates quantity of information generated or responses undertaken: many quick fixes give more reward</td>
</tr>
<tr>
<td>• Does not stimulate the generation of high quantities of quick information and quick fixes</td>
<td>• Gets in the way of quality/depth of the information generated and response developed</td>
</tr>
</tbody>
</table>

Effectively rewarding of employees for their appropriate individual responses to fresh market information is likely to require more elaborate and fine-tuned reward systems than most firms may be able and willing to operate (Kohli and Jaworski 1990).

*HYPOTHESIS 1: Management commitment to MO and MO-based reward systems have a positive effect on all dimensions of IMOB.*

**Network Positions in the Work Network: Local and Global Embeddedness**

We mentioned network position in the introduction; by this we mean the connectedness of an employee within an organization through social interactions (Brass 2004). Individual market-oriented behavior is, in essence, entrenched in social interactions. Information creation happens through the interactions of an individual employee with fellow employees, management, and customers. Moreover, realizing the usefulness of data often requires hearing the points of view of others, after which data can be turned into information and from there into relevant knowledge. This
process is impossible without interaction between at least two people—and preferably more than two. Finally, to devise strategically sound responses to market information and knowledge, one has to be able to make sense of the information first (which is best done in conversation with others), contemplate as many viable alternative actions as possible (which is best done in discussion with others), and have insight into what has been tried before and what has worked and what has not (which requires the joint memory of multiple coworkers). Besides that, trying out new ways of creating value for customers can often require workers to step out of their comfort zones and abandon some of their routines, which is most easily done when there is a safe and supportive network of colleagues on which to rely (Klein et al. 2004; Morrison 2002).

It is immediately obvious that employees who barely have any work-related ties in a company will be ill-positioned to behave in a truly market-oriented way. Likewise, it makes sense, intuitively, to argue that employees who have a more central position in the firm’s work-related network will have higher IMOB potential than employees who reside at the periphery of the firm’s network. We therefore contend that an employee’s position in the firm’s work-related network can strongly affect the extent to which the employee can be market oriented. When the firm’s top management displays strong management commitment to MO or offers IMOB-based reward systems, the effects on employees’ IMOB are, therefore, likely to depend on their position in the firm’s work-related network. Before we describe this phenomenon further, let us discuss two different types of “network position.”

To behave in a market-oriented manner, employees require access to relevant information—that is, information that is relevant to them. Although a member of the customer service department could theoretically benefit from hearing that a foreign
competitor is considering entering his company’s market, he would generally benefit more from hearing about the variety of complaints the current customers have, the solutions that other colleagues in customer service have developed, the changing wishes of the customers, and other related information. An employee’s main sources and targets of relevant market information are that employee’s direct coworkers. By interacting with fellow coworkers, an employee gets quick and easy access to the information that is most relevant in his daily work. The aim is to discuss work-related information with others who understand the work and customers. In this study, we denote the extent to which an employee actively engages with his coworkers as “local embeddedness.” Employees who are strongly locally embedded (i.e., who have a well-developed local network) have immediate access to relevant information, but this access comes at the expense of low information variety: coworkers who do a similar job and deal with similar customers with similar needs will likely not have a divergent set of information to share and discuss.

To be able to develop innovative responses and gather information that has a farther-reaching impact than on one’s daily job alone, employees require networks that reach considerably further than the employee’s daily coworkers. Novel insights come from sharing information and discussing company strategies and opportunities with employees who reside at various hierarchical levels and in various departments and who deal with different parts of the customer process than the focal employee does. A variety of information comes from one’s far-reaching network ties rather than from the ties with one’s coworkers. We will refer to these far-reaching ties across various kinds of firm boundaries as an employee’s “global embeddedness.” Global embeddedness refers to the extent to which an employee is connected to the company
at large, allowing the employee to draw on information that resides in pockets of the organization that one’s local ties cannot reach. Although global embeddedness offers the benefit of diversity of information and insight, it has the disadvantage of being more costly to maintain, it may bring information that one has no interest in or does not understand, and it may be infrequent. In addition, whereas ties to coworkers provide an effective platform for discussing information and trying out new ways of working, network ties that reach to distant pockets of the firm are less conducive to processing information in ways that are meaningful to one’s daily job. Table 2 summarizes the differences between local and global embeddedness. Although local and global embeddedness appear to capture the opposite aspects of one’s position in the work-related network, they are not mutually exclusive nor are they opposites on the same continuum. An employee can have abundant local ties (and thus be strongly locally embedded) and also maintain an impressive portfolio of global ties across the firm (and thus be strongly globally embedded). Similarly, an employee may have little interaction in general, with coworkers and outsiders. Some employees tend to prefer easy interaction with coworkers, whereas others prefer the excitement of dealing with people who are different from them. Although the two kinds of ties tend to correlate mildly, they capture different kinds of relationships and are therefore distinct constructs. As a consequence, we develop hypotheses for the two types of network positions separately.
TABLE 2: Characteristics of Local and Global Embeddedness

<table>
<thead>
<tr>
<th>Local ties</th>
<th>Global ties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick information access</td>
<td>Information not immediately accessible</td>
</tr>
<tr>
<td>Ease to create and maintain (“comes with the job”)</td>
<td>Requires effort to create and maintain (prestige building), goes beyond simple daily activity</td>
</tr>
<tr>
<td>Provides information more relevant to ego’s daily activity</td>
<td>Provides information relevant to the organization but less relevant to ego’s daily task</td>
</tr>
<tr>
<td>Limited in information variety</td>
<td>Provides more information variety</td>
</tr>
<tr>
<td>Good opportunity to process information through relevant and intense discussion</td>
<td>Less conducive to processing of information but may be more inspiring to ego’s openness to new ideas</td>
</tr>
</tbody>
</table>

Moderation of the Effectiveness of Management Commitment

The effect of management commitment on IMOB is couched in top-down communication, in the expectation that employees will see the commitment of management as a signal and “buy into” MO (Schlosser and McNaughton 2007, p. 439) as an important activity. It mainly caters to the intrinsic motivation of employees who want to do what is good for the company and see the management’s commitment to MO as a signal that cultivating MO is indeed the right thing to do (Davis et al. 1992). It assumes that an individual employee becomes inspired to be more market oriented and to hunt for information and develop responses that are profound and move the company forward. Strong local embeddedness is not likely to support the generation of deep, insightful, and profound information because it is too deeply rooted in daily routine to promote great endeavors, in terms of management’s
strategic direction. Thus, the more deeply an employee is embedded locally, the less likely it is that he or she will respond to top management’s commitment.

Global ties, in contrast, are preeminent sources of new insight, original thought, and ideas that build on cross-fertilization and that may have the potential to bring the company to the next level. In addition, because global ties are more costly to forge and maintain, and may often be too complex to draw useful and implementable insight from, using them in IMOB requires intrinsic motivation. Employees who have the intrinsic motivation to create and preserve such ties (and are thus open to new and varied insight) are likely to respond positively when management is committed to creating and disseminating market-related information in the firm.

HYPOTHESIS 2: The effect of management commitment on both generating and sharing market information becomes more positive with increasing global embeddedness (2b) and is canceled out with increasing local embeddedness (2a).

In terms of responding to market information, an extensive close-knit local network is unlikely to provide a breeding ground for developing the profound and original responses that internally MO-motivated employees search for. The more firmly an employee is embedded in a local network, the less he or she will suffer from the lack of diversity among network partners. Strongly locally embedded employees who are intrinsically motivated to develop optimal strategic responses to fresh market information usually do not increase their IMOB by following the example set by management. In addition to the lack of variety of information that results from strong
local embeddedness, there is another negative effect: strong, frequent ties with employees nearby who do similar tasks tend to guard against deviation from the existing routine rather than support a break in routine in favor of innovation (Brass 2004). Strong, close-knit networks of coworkers tend to inhibit employees from changing the way they do their work and often penalize those who decide to do things differently (Brass 2004). This situation impedes innovation and innovative responses to market information. Employees with low local embeddedness are in a much easier position to break routines and try out new ways to service customers. Management commitment is more likely to lead to innovative responses to market information from those low in local embeddedness than from those high in local embeddedness.

Conversely, whereas strong local embeddedness locks ego into daily routines, the global network frees the employee and allows for more cognitive space. Interacting with others who have different experiences and expertise provides fertile ground for innovative responses and ideas. Although the solutions coming out of one’s global network may require more work to translate into actionable steps for the employee, the global network’s diverse outlook may provide more stimulating and creative responses in every respect.

**HYPOTHESIS 3: The effect of management commitment on the response to market information becomes negative with increasing local embeddedness (3a) and positive with increasing global embeddedness (3b).**
Moderation of the Effectiveness of Reward Systems

Reward systems spur particular behaviors by putting a premium on compliance. Extrinsically motivated employees are likely to be affected most by these systems because the opportunity to increase their salary (or to become “employee of the week”) motivates them. In a way, reward systems remove the need for employees to think for themselves; all they need to do is follow formalized and rewarded protocols (Davis et al. 1992). Such an approach resonates most with employees who are strongly embedded locally and least with those who are strongly embedded globally. Employees who maintain strong and abundant local ties have chosen to invest in relatively homogeneous, easy, low-cost, less-inspiring ties (compared with a sizeable portfolio of global ties). This kind of embeddedness is well-suited for those with high extrinsic motivation. As we have argued earlier in this study, reward systems are especially effective at supporting searching for and sharing of market information. Close-knit groups of coworkers, often with similar backgrounds, expertise, and experiences, are likely to be internally coherent in their views of the world. If the rewards appeal to them, they are likely to all start engaging in the market information generating and sharing activity that is rewarded.

Reward systems are likely to be less effective in influencing employees with extensive global ties. The effects may even be negative. Creating and maintaining global ties often require intrinsic motivation, which is incompatible with the extrinsic motivation of monetary reward systems (Deci et al. 1999). Employees who are highly intrinsically motivated may respond unfavorably (and even negatively) to management instruments that use extrinsic motivational triggers (Deci et al. 1999).
Besides, if the volume of information found and shared is rewarded, then it is counterproductive to engage in ties that are costly to maintain and that yield information that may not be readily useful to the employee (and may not at all be that easy to share with relevant others). In sum, strong global embeddedness may make it unlikely for an employee to increase his or her market information generating and sharing activities—both because it does not motivate him or her and because embeddedness in the work-related network doesn’t lend itself to a strong focus on this kind of activity.

**HYPOTHESIS 4**: The effect of reward systems on both generating and sharing market information becomes more positive with increasing local embeddedness (4a) and negative for increasing global embeddedness (4b).

Network ties to coworkers provide safe and quick ways to make sense of market information and to process it into feasible responses. By discussing the information that has been collected and shared by people through direct contacts, employees can quickly devise new ways of delivering value to customers that fit well with their daily routines. When it is clear to everyone in the firm that management values and rewards devising appropriate responses, workers may be less motivated to hang onto the status quo and may be more willing to come up with solutions to change the overall practice slightly so that customer value and employee rewards (monetary and nonmonetary) increase simultaneously. Global ties, in contrast, are harder to measure and reward. Others in different parts of the organization may be less likely to be able to come up with feasible responses for the focal employee’s
clients and daily work routine. Employees who have many global ties may therefore be less able provide useful responses and may even waste their time trying to do so. In addition, employees who are strongly globally embedded in the firm are likely to have a more eclectic view of their work and are less likely to be stimulated by external and formal quick gains (Morrison 2002). As a result, their MO-response behavior may not be stimulated by formal rewards to begin with. Therefore, we expect that reward systems will not be effective for those who are highly globally embedded.

**HYPOTHESIS 5: The effect of reward systems on the response to market information becomes more positive with increasing local embeddedness (5a) and is canceled out with increasing global embeddedness (5b).**

**FIGURE 2: Conceptual model**

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Management

Management Commitment to MO

Local

Individual Market-Oriented

Creation of market information
Sharing of market information
Responding to market

Global
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### TABLE 3: Summary of the Hypotheses

<table>
<thead>
<tr>
<th></th>
<th>Generation</th>
<th>Dissemination</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management commitment</td>
<td>Positive effect</td>
<td>Positive effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Reward systems</td>
<td>Positive effect</td>
<td>Positive effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Mgt. commit. * Local</td>
<td>Cancels out</td>
<td>Cancels out</td>
<td>Becomes negative</td>
</tr>
<tr>
<td>Mgt. commit. * Global</td>
<td>More positive</td>
<td>More positive</td>
<td>More positive</td>
</tr>
<tr>
<td>Reward * Local</td>
<td>More positive</td>
<td>More positive</td>
<td>More positive</td>
</tr>
<tr>
<td>Reward * Global</td>
<td>Becomes negative</td>
<td>Becomes negative</td>
<td>Cancels out</td>
</tr>
</tbody>
</table>
METHODOLOGY

Data Collection

Figure 2 contains our conceptual model and Table 3 summarizes the hypotheses. To test our hypotheses, we collected data about the internal advice network structures for a sample of 60 mostly small and micro firms. In a suitable sample of firms, firm size typically ranged between 20 and 30 employees (only five firms had a population exceeding 50 employees). We enlisted the cooperation of an association of graduates of a large MBA program at one of the top business schools in China. Consistently ranking in the nation’s top three business schools, this association of graduates provided us with a rich source of contacts. Some of the firms employing these contacts were randomly selected to be part of the sample. Given the possible randomness of such a sample, we also controlled for firm size (no more than 100 employees), industry (mainly in the service industry), and ownership (mainly in the private sector) to avoid a skewed distribution. We were able to collect data from 60 firms after approaching 224 firms (response rate: 26.8 percent), for a total of 1175 responding employees.

We asked the contacts from the 60 firms to provide a list of employees to be informants and answer questions in the survey. The informants in our survey were from different functional categories: top management, HR managers, frontline managers, support staff, and frontline employees. Top management provided firm-level and general management information. HR managers provided objective human resource and related organizational data about the firm, including data about the reward system. Frontline employees and frontline managers provided information
about the MO behavior. All employees provided network data. Surveys for each of these different groups contained partly overlapping questions, allowing for cross-validation of information to ensure consistency and reliability.

**Measures**

*Individual market-oriented behaviors.* IMOB includes generating, sharing, and responding to market information. We collected data for employees’ IMOB using Schlosser and McNaughton’s 20-Item Individual MO Scale (Schlosser and McNaughton 2009). The I-MARKOR originated from Kohli and Jaworski’s earliest version of MARKOR (Kohli *et al.* 1993). We had the questions translated from English into Mandarin. Back-translation indicated high internal validity (Brislin 1970; Van de Vijver and Leung 1997). The surveys were filled out by the employees onsite.

*Embeddedness.* Respondents received a name list provided by the HR department of each firm. Following common practice from social network analysis literature—such as Krackhardt (1990) and Ibarra and Andrews (1993)—the employees were asked to answer the question: “Generally who do you ask for advice when you have a work-related problem?” Answers to this question captured the task-related advice network in the firm, which is one of the most commonly studied types of intrafirm network relations (Ibarra 1993; Klein *et al.* 2004; Sparrowe *et al.* 2001). Respondents were not restricted to a fixed number of nominations. The answers to this sociometric question provided the raw data used to derive the measures of local and global embeddedness (Marsden 1990).

Local embeddedness refers to the employee’s network of direct mutual ties. Embeddedness is measured by the number of reciprocated ties maintained by the employee and thus indicates the activity in the employee’s local pocket of the
network, combining the potential for the employee to exert influence on and receive support from his or her immediate ties (Freeman 1978; Mrvar and Batagelj 2011).

An employee’s global embeddedness increases as he or she has more and farther-reaching contacts throughout the firm; this position affords him or her access to information and knowledge that reside in many different pockets of the firm’s network at large—either directly or indirectly. This measure combines the average path length of the employee to that of everybody else in the organization the employee can eventually reach. The closer one is to the other members of the organization and the larger one’s network (in terms of both direct and indirect connections), the higher the level of one’s global embeddedness. The mathematical details of this measure are presented in Appendix A.

Management instruments. To measure top management’s commitment to MO, we adapted a 9-item scale developed by Hartline and Ferrell (1993). This scale operationalizes top managers’ affective commitment to MO. Reward systems were measured by the 6-item market-based reward system proposed by Kohli et al. (1993). Both the items of the MO commitment scale and those of the reward systems scale were administered to HR managers and the top managers of the firms. These employees were the most qualified to answer these questions. These variables, therefore, reside at the firm level.

Controls. In addition to the predictors in our framework, there are other factors that influence a person’s market-oriented behavior. Thus, we included several individual-level control variables in the empirical analysis to test the proposed relationships while controlling for other possibly important influences. We controlled for the tenure of employees within their jobs (measured in years), because longer
tenure may lead to an employee having more relevant market knowledge and experience in translating that knowledge into feasible responses (Busch 1980; Ruekert 1992). For similar reasons, we controlled for employee age. Finally, we also controlled for the gender of employees because marketing scholars have suggested that gender differences may be significant in explaining frontline employee behavioral outcomes (Babin and Boles 1998; Busch 1980; Sigauw and Honeycutt Jr 1995).

**Measure Quality**

Appendix B contains all the items per construct. Table 4 contains the main descriptive statistics. Table 5 shows that the three dimensions of IMOB (creating, sharing, and responding to market information) have the tendency to go together: They correlate highly and positively, especially when creating and sharing market information are concurrent. There is a positive correlation between the management’s commitment to MO and the extent to which it employs reward systems that incentivize IMOB, but the correlation is only modest (.33): the levels of management commitment and MO-based reward systems tend to be similar, but firms do not routinely employ both (or neither). As one would expect, there is a positive correlation between tenure in one’s job and age (.57). Although there was one 76-year-old employee, most employees were in the prime of their working lives (78 percent were below 40 years of age and 92 percent were below 50 years of age). There was a medium-sized positive correlation between an employee’s local and global embeddedness (.37), which shows that “networkers” tended to have both considerable local and global embeddedness (and “non-networkers” were relatively low on both) but that a high local embeddedness does not necessarily imply that one also is high in global
embeddedness (and vice versa). Because the firm consisted of many more people than any one employee’s direct local network, the global embeddedness score necessarily showed a larger range than the local embeddedness score; this is what we expected.

Another test of data and measurement quality concerns the internal consistency reliabilities. The reliability indexes (on the diagonal of Table 4) indicate that the construct measures were psychometrically sound, and no coefficient alpha values were lower than .83 (the three IMOB scales had alphas of .90, .89, and .93, and the management commitment and reward systems scales had alphas of .86 and .83).

Management commitment to MO- and IMOB-based reward systems are firm-level variables. We collected these data using multiple informants at the HR and top-management levels of the firm. Aggregation to the firm level was justified by calculating the interrater agreement index $r_{agj}$ (James et al. 1984). The median $r_{agj}$ for management commitment to MO was .95 and for IMOB-based reward systems was .91, justifying aggregation to the firm level.

In the literature (Schlosser and McNaughton 2009), MO is generally seen as a three-factor construct (Kohli and Jaworski 1990); we have specified our hypotheses accordingly. To test whether our IMOB data indeed follow this three-factor structure, we conducted two confirmatory factor analyses. In the first, we included all multi-item constructs (i.e., all IMOB items, Management commitment, and Reward systems) and checked whether they formed a five-factor construct (with IMOB having the generation, sharing, and responding factors). We then repeated this exercise for the IMOB items only to again check if the three subscales would be supported. We conducted the analyses using the R package “lavaan” (Rosseel 2012), using full information maximum likelihood. In each case, we compared the three-factor IMOB
solution with a two-factor (with Creation and Sharing combined) and a one-factor (all items combined) solution. In both approaches, the three-factor solution (with Creation, Sharing, and Responding cleanly separated) was clearly the best fit. In the model with all multi-item constructs, using the 3-factor solution, fit measures were RMSEA = .053, SRMR = .088, CFI = .87, AGFI = .96, and GFI = .97. When we considered the IMOB only, the fit measures for the three-factor solution were RMSEA = .083, SRMR = .073, CFI = .90, AGFI = .97, and GFI = .98. These fit measures are close to those reported by Schlosser and McNaughton (2009), as are the reliability indexes for the Creation, Sharing, and Responding factors. We can conclude that the IMOB construct indeed consists of three separate factors, each achieving good reliability.
TABLE 4: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tr>
<td>Individual level</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>1. Generating info</td>
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<td></td>
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<td></td>
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<tr>
<td>2. Sharing info</td>
<td>.77†</td>
<td>.89</td>
<td></td>
<td></td>
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<tr>
<td>3. Responding to info</td>
<td>.51†</td>
<td>.53†</td>
<td>.87†</td>
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<td>.05</td>
<td>.09†</td>
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<td>.10‡</td>
<td>.37†</td>
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<td>6. Tenure</td>
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<td>.09†</td>
<td>-.08†</td>
<td>-.02</td>
<td>.12‡</td>
<td></td>
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<td>7. Age</td>
<td>.26‡</td>
<td>.21‡</td>
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<td>-.02</td>
<td>.16†</td>
<td>.57†</td>
<td></td>
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<td>8. Gender</td>
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<td>.15‡</td>
<td>.16‡</td>
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<td>9. Management commitment</td>
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<td>.36‡</td>
<td>.21‡</td>
<td>.07‡</td>
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<td>-.02</td>
<td>.14‡</td>
<td>.05</td>
<td>.86</td>
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<tr>
<td>10. Reward system</td>
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<td>.26‡</td>
<td>.15‡</td>
<td>.03</td>
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<td>-.03</td>
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<td>.01</td>
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<td>.83‡</td>
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<tr>
<td>Mean</td>
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<td>4.08</td>
<td>4.81</td>
<td>.29</td>
<td>5.02</td>
<td>4.42</td>
<td>33.33</td>
<td>.50</td>
<td>4.64</td>
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<tr>
<td>Standard deviation</td>
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<td>1.05</td>
<td>.85</td>
<td>.69</td>
<td>6.36</td>
<td>4.39</td>
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<td>Minimum</td>
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<td>18.00</td>
<td>0.00</td>
<td>2.89</td>
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<td>Maximum</td>
<td>6.00</td>
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<td>6.00</td>
<td>33.00</td>
<td>40.00</td>
<td>76.00</td>
<td>1.00</td>
<td>5.50</td>
<td>5.81</td>
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</table>

* p < .05 (two-tailed)
† p < .01 (two-tailed)

Notes: Below the diagonal are the correlations based on scores disaggregated per employee (N = 1179), and Cronbach’s (1951) internal consistency reliability coefficients appear on the diagonal (between parentheses), where appropriate. Gender is dichotomous (0 = male, 1 = female), tenure in one’s job and age are measured in years.

Variables at the firm level were aggregated through a multivariate approach. Aggregation to the firm level requires sufficient intraclass agreement. The median ICC scores for Management commitment and Reward systems were .95 and .92, respectively, which is quite high and justifies aggregation.
RESULTS

Because our dependent variable (IMOB) is an individual-level variable and some of our explanatory variables (Management commitment and MO-based reward systems) are firm-level variables, we used a multilevel model to test our hypotheses, with data on 1175 employees nested within 60 firms. We carried out the analyses for the three IMOB dimensions (Generation of market information, Sharing market information, Responding to market information) separately, so we could assess the distinct effects of the management instruments for each. Because Local embeddedness and Global embeddedness are sensitive to firm size (i.e., one can have more reciprocated direct ties in a larger firm than in a smaller firm), we group-mean centered Local embeddedness and Global embeddedness measures, as suggested by Cronbach (1976) and Cronbach and Webb (1975). This has the advantage of correcting for the firm-size effect (Enders and Tofighi 2007; Hofmann and Gavin 1998) and brings the added benefits of stabilizing covariance estimates in multilevel models (Hox 2010) and making the cross-level interactions more readily interpretable. A positive score on either measure means that the employee’s embeddedness is above-average (for employees in that firm); a positive (and significant) interaction term of, for example, Reward systems with Local embeddedness means that the effect of MO-based reward systems within a firm is larger for those employees whose local embeddedness is above the average of all employees in that firm.

We present the results of our analysis in Table 5. Hypothesis 1 states that Management commitment to MO- and IMOB-based reward systems is expected to have positive effects on the individual market-oriented behavior of employees across
TABLE 5: Multilevel Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Creation of information</th>
<th>Sharing of information</th>
<th>Responding to information</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Individual level</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Intercept</td>
<td>-.69 (.67)</td>
<td>-.47 (.68)</td>
<td>-.44 (.75)</td>
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<td>.01 (.01)</td>
<td>.00 (.01)</td>
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<td>.27** (.07)</td>
<td>.12* (.07)</td>
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<td>.01* (.00)</td>
<td>.01* (.00)</td>
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<td>-.14 (.60)</td>
<td>.32 (.54)</td>
</tr>
<tr>
<td>Global embeddedness</td>
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<td>.16 (.09)</td>
<td>.14* (.08)</td>
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<tr>
<td>Firm level</td>
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<tr>
<td>Management commitment</td>
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<td>.52** (.13)</td>
<td>.50** (.14)</td>
</tr>
<tr>
<td>Reward systems</td>
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<td>.43** (.14)</td>
<td>.49** (.15)</td>
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<td>Log likelihood</td>
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<td>-915.27</td>
<td>-1116.62</td>
</tr>
<tr>
<td>Change in deviance</td>
<td>18.91 (p &lt; .01)</td>
<td>14.16 (p &lt; .05)</td>
<td>14.51 (p &lt; .05)</td>
</tr>
</tbody>
</table>

* p < .05 (two-tailed)
** p < .01 (two-tailed)

Standard errors in parentheses. The individual-level variables Local embeddedness and Global embeddedness were group centered before the analysis.
all three IMOB dimensions. This hypothesis receives clear empirical support, though the effects of the management instruments for Responding are less strong than for Generation and Sharing of market information. Overall, the two management instruments appear to clearly contribute to the market-oriented behavior of employees. The other hypotheses all deal with the moderating effects of embeddedness on the effectiveness of the management instruments. We have organized the discussion of the analyses according to each IMOB dimension.

Sharing of market information. With respect to sharing market information, we find a positive, significant interaction between management commitment and global connectedness: Employees with wider-ranging, more extensive ties throughout the firm respond more positively to management’s commitment to MO than those with a lower global reach (in support of Hypothesis 2b). We also expected that high levels of local embeddedness would cancel out the effect of management commitment (Hypothesis 2a), but the interaction term is not significant. Overall, management commitment appears to work well in spurring employees’ creation of market information.

For reward systems, there is a positive and statistically significant interaction between reward systems and local embeddedness: Reward systems especially increase the IMOB of employees who have many strong connections to their immediate coworkers’ circles. This finding is in line with our expectation, which we formulated in Hypothesis 4a. Although we do see the negative sign of the interaction term of reward systems with global embeddedness (Hypothesis 4b), which we expected, the term does not reach statistical significance. Overall, the effect of reward systems on stimulating employees to create more market information appears to be positive,
especially for those with high local embeddedness. Whereas management commitment encourages mainly globally embedded employees to create information, reward systems prompt mainly locally embedded employees to do so.

Sharing of market information. Despite the expectation formulated in Hypothesis 2, neither of the interaction terms of management commitment is statistically significant. Conversely, both interaction terms for reward systems are statistically significant and have the expected directionality. In particular, reward systems seem to appeal mainly to employees who are strongly embedded locally (Hypothesis 4a) but weaken in power significantly for those with high global embeddedness (Hypothesis 4b). Figure 3A displays the interaction plot. As the plot shows, the positive effect of reward systems on information sharing behavior strongly decreases with increasing global embeddedness—to the point of canceling out the effect altogether. The effect does become negative eventually as global embeddedness becomes large enough, but only about 5 percent of the employees in our data set had global embeddedness scores that large. In general, the effect of reward systems on information sharing weakens, but it will become negative for only a small proportion of a firm’s employees.

Responding to market information. In Hypothesis 3a, we formulated the expectation that Management commitment would negatively affect actively searching for strategic responses to new market information by employees who are strongly locally embedded. This hypothesis is supported because the interaction terms of commitment and local embeddedness are negative, statistically significant, and large enough to turn the slope downward. In Figure 3B the negative slope for high global embeddedness is quite clear. The inflection point, in which the slope turns negative,
occurs when an employee has one more reciprocated tie to a coworker than the average employee in his or her firm. Thus, in practice, anyone who has more reciprocated ties to coworkers than what is average in the firm will reside on the line’s negative slope and is expected to respond less to new market information than others. We do not find support for Hypothesis 3b, which states that global embeddedness increases the positive effect of management commitment. Therefore, the effect is not statistically significant.

Reward systems show an effect that is similar to the effect of Generating and Sharing. Locally, well-embedded employees respond especially favorably (hypothesis 5a), whereas globally, well-embedded employees respond much less (hypothesis 5b, Figure 3C). For the latter group, the effect becomes negative for those who are globally well connected; this is the case for about 15 percent of the employees in our sample. So though the negative effect does occur, it does not occur for a large group. At the same time, for about a third of all employees global embeddedness is large enough to cancel out most effects of reward systems on their Responding behavior.

<table>
<thead>
<tr>
<th></th>
<th>Acquisition</th>
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<th>Response</th>
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<td>Positive effect</td>
</tr>
<tr>
<td>Reward Systems</td>
<td>Positive effect</td>
<td>Positive effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Mgt.Commit * Local</td>
<td>ns</td>
<td>ns</td>
<td>Becomes negative</td>
</tr>
<tr>
<td>Mgt.Commit * Global</td>
<td>More positive</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Reward * Local</td>
<td>More positive</td>
<td>More positive</td>
<td>More positive</td>
</tr>
<tr>
<td>Reward * Global</td>
<td>ns</td>
<td>Turns negative</td>
<td>Cancels out</td>
</tr>
</tbody>
</table>

Note: “ns” means that the effect was statistically not significant.
FIGURE 3: MODERATION

HYPOTHESIS 3A

Mgt. Commitment, moderated by local embeddedness

HYPOTHESIS 4B

Reward systems, moderated by global embeddedness

60
HYPOTHESIS 5B

[Graph showing reward systems moderated by goal embeddedness]
DISCUSSION

Table 6 summarizes the empirical findings. There are clear differences in the effectiveness of the management instruments, both in terms of what type of MO behavior they work best for and which employees they deliver the desired results for. In terms of stimulating the acquisition of market information, both instruments appear to be useful and complementary. Management commitment mainly affects employees who are broadly connected within the firm, whereas reward systems mainly appeal to locally connected employees. Because firms differ, this idea can have implications for which management instrument might work best in stimulating the acquisition of market information. Some firms organize their employees into tight-knit teams by job (e.g., call centers or offsite manufacturing facilities). In this case, it is unlikely that management commitment to MO will entice these employees to strongly increase their market information search behavior. The results of our analyses suggest that these employees would be motivated most by IMOB-focused reward systems. Conversely, firms that strongly build on cross-functional teams and let their employees be part of multiple teams or projects simultaneously would likely stimulate market-information-seeking behavior most by having management show a strong commitment to an IMOB.

Note that there is an inherent risk in reward systems that seems to speak in particular to locally embedded employees. If a firm uses reward systems as its main tool to incite the gathering of market information, there is a chance that this market information-gathering activity will mainly be performed by employees who are strongly locally embedded, which can starkly limit the variety and originality of the
information generated. The firm risks receiving mundane and largely uninteresting information, which strongly limits the information’s benefits.

Reward systems to intensify information sharing behavior tend not to affect strongly globally embedded employees (or, in a small proportion of employees, may even decrease sharing activity). To stimulate these employees to share more market information, management commitment seems to be the more effective choice (though the interaction terms are not significant, the main effect of management commitment is still strong and positive and is not affected by employee embeddedness).

Response behavior is influenced differentially by two management instruments. Reward systems are useful to compel locally connected employees to search for useful local responses to market information, whereas management commitment can have a negative effect on them. Achieving the desirable response behavior requires careful planning.

So, as we ask in the title of this study, does management matter? The analyses in this study imply that it does—perhaps more so than many managers might realize. It appears that just picking one management instrument might not lead to optimal results when attempting to make employees behave in a more market-oriented way. Neither management commitment nor reward systems have positive results for all employees or for all types of behavior. Rather, our results indicate that both instruments are necessary, and the exact balance between them can vary according to how the work is organized (e.g., mainly in locally constricted settings, or in settings that span larger parts of the firm) or what type of employees the firm wants to reach. This is a preeminent example of a management task; fueling people’s market-oriented behavior requires well-aimed management activity and deliberate choices. Overall,
reward systems work well across the board to spur locally well-connected employees into an IMOB. Strongly globally connected employees will probably not become more market oriented in their behavior as a result of MO-based rewards. Management commitment is almost always good. Its main effect is positive and strong, and interaction rarely turns the effect negative. Moreover, because management commitment seems to appeal to globally connected employees more than to those locally connected, it is to be expected that the market information that is generated (and perhaps also the responses that are developed) will be varied, comprehensive, and original—the kind of market information that firms can strongly benefit from in achieving a competitive advantage in the marketplace.
APPENDIX A: CALCULATING GLOBAL EMBEDDEDNESS

Global embeddedness captures the extent to which an employee is connected throughout the firm at large. Mathematically, this extent is a combination of the average path length to everybody else in the organization and one’s network size. The closer one is to other members of the organization and the larger one’s network (in terms of both direct and indirect connections), the higher one’s global embeddedness. In literature, this measure is also somewhat awkwardly referred to as “domain prestige” and Lin (1976) describes it in full detail. In the following sections we will call the employee “ego” and concisely refer to the other members of the organization as the ego’s “alters.”

We define $r_i$ as the number of alters that can be reached (directly or indirectly) by ego; this is also known as the size of the employee’s reachability graph. The ego’s ideas eventually reach all alters in $r_i$ and vice versa. This variable captures the extent to which ego is exposed to ideas that exist throughout the firm. We define $p_i$ as the average path length from ego to his or her alters; $p_i$ measures how long it takes to access information spread from ego’s alters to ego (Beauchamp 1965; Freeman 1979). Note that we are using directed ties, so the direction of the flow is taken into account in the global embeddedness measure.

The global embeddedness of employee $i$ can then be measured as

\[ \text{GlobalEmbeddedness}_i = \frac{r_i}{p_i(n-1)} \]

where $n$ is the number of people in the network. Ego’s global embeddedness increases when ego is (directly and indirectly) connected to a larger number of alters and when his or her distance from these alters decreases.
APPENDIX B: SCALE ITEMS

Individual MO Behavior

Market Information Generating Behavior (8 items)
I ask people who used our product or service to assess the quality.
I interact with people—either directly from customers or agencies (distributors)—to know what product or services customers will need in the future.
In my communication with these people, I periodically review the likely effect of changes in our business environment (e.g., company mergers and acquisitions) on customers.
I take responsibility to detect fundamental shifts in our business (e.g., competition, technology, regulation) in my communication with distributors.
I talk to or survey those who can influence our customers’ purchases (distributors).
I review our product development efforts with distributors to ensure that our efforts are in line with what customers want.
I participate in informal “hall talk” that concerns our competitors’ tactics or strategies.
I collect industry information through informal means (e.g., lunch with industry friends, talks with trade partners).

Market Information Sharing (7 items)
I participate in interdepartmental meetings to discuss market trends and developments.
I let appropriate departments know when I find out that something important has happened to a major distributor, market, or customers base.
I coordinate my activities with the activities of coworkers or departments in this organization.
I pass on information that could help company decision-makers review changes taking place in our business environment.
I communicate market developments to departments other than marketing.
I communicate with our marketing department concerning market development.
I try to circulate documents (e.g., e-mails, reports, newsletters) that provide information about my distributor contacts and their customers to appropriate departments.

Market Information Response (5 items)
If a customer has a problem with our product or service, I try to find something or some person to solve the problem.
I try to help customers/distributors achieve their goals.
I respond quickly if a customer/distributor has any problems with our offerings.
I take action when I find out that customers are unhappy with the quality of the service or product.
I jointly develop solutions for customers with members of our customer/adviser relationship team.

MO-Based Reward System (6 items)
No matter which department they are in, people in this business unit get recognized for being sensitive to competitive moves.
Customer satisfaction assessments influence senior managers’ pay in this business unit. Formal rewards (i.e., pay raise, promotion) are forthcoming to anyone who consistently provides good market intelligence. Salespeople’s performance in this business unit is measured by the strength of relationships they build with customers. Salespeople’s monetary compensation is almost entirely based on their sales volume.

We use customer polls for evaluating our employees.

**Management Commitment to MO (9 items)**

- I feel strongly about the importance of MO for our company.
- I enjoy talking about our customers and competitors with my colleagues—especially my subordinates.
- I gain a sense of personal accomplishment in providing to or sharing with my colleagues information about our customers or competitors.
- I explain to all of my employees the importance of MO for our company.
- I often discuss with people outside my company issues related to market-orientated strategy.
- MO should be the number one priority of my company.
- I am willing to put in a good deal of effort beyond what is normally expected to help my company progress with MO.
- The way I feel about MO is in line with my colleagues.
- I really care about our company’s marked-oriented policies.

*In reversed order*
CHAPTER 3: A KNOWLEDGE RESERVOIR WHEN TIME GOES BY

The Role of an Intrafirm Network in Sustaining Competitive Advantage of
Market Orientation

2 Also presented at 2012 AoM Annual Conference, Boston, USA, August 2012.
ABSTRACT

Numerous studies have confirmed the positive impact of a market orientation (MO) on performance. However, MO’s ability to be a sustainable competitive advantage is still questionable, and few previous studies have investigated this issue. By aggregating a sample of 1175 multi-source informants from 60 firms, this study found that time spent on MO (MOT) has an inverted U-shaped relationship with customer knowledge, which fully mediates the link between MOT and performance. Moreover, intrafirm network density positively moderates the link between MOT and customer knowledge: It decreases more slowly in networks with high density than in those with low density. The sustaining effect of an intrafirm network clarifies current inconclusiveness on the impact of MO on firm performance over time. This study suggests that firms build a strong intrafirm network, metaphorically called a knowledge reservoir, to turn firms’ MOs into a sustainable competitive advantage.
INTRODUCTION

Theoretically, a market orientation (MO) provides firms with a knowledge-based edge over competitors through a culture of constantly acquiring, sharing, and reacting to information and knowledge about customer needs (Kohli and Jaworski 1990; Sheth 2000; Day 1994; Slater and Narver 1995). Obviously, it is impossible to acquire this edge instantly; it requires accumulative processes that yield competitive advantages for an enduring length of time after the initial stages of MO adoption (Kumar, Jones, Venkatesan, and Leone 2011; Gebhardt, Carpenter, and Sherry 2006; Slater and Narver 1995). Despite a large extant body of literature supporting MO's positive impact on firm performance (Kirca, Jayachandran, and Bearden 2005; Homburg and Pflesser 2000), prior research, except for a few studies, rarely addresses the issue of the long-term benefit of MO (cf. Gebhardt et al. 2006). For MO to remain relevant, it is important to answer how MO can provide this long-term benefit—or sustainable competitive advantage (SCA) (Kumar et al. 2011; Slater and Narver 1995).

Previous research has offered us a hint: the lasting benefit of MO can be achieved through a firm’s inherent social structure (Slater and Narver 1995) that favors organizational learning through growing customer knowledge (Kohli and Jaworski 1990). Because this knowledge is implicit and resides in individual employees who acquire and apply it on a day-to-day basis, its complex nature allows colleagues to access it only through social interactions within firms. In other words, a firm’s customer knowledge, acquired through adopting MO, is mostly “socially embedded” (Hitt, Bierman, Shimizu, and Koehhar 2001). The firm has to possess a social structure that facilitates its organizational learning of such knowledge as a whole (Slater and Narver 1995). Although the MO literature repeatedly emphasizes
the importance of social interaction for acquiring and using customer knowledge (Lam, Kraus, and Ahearne 2010; Hartline and Ferrell 1996), few studies have explicitly explored its role.

As time goes by, the firm-specific social structure, composed of employees interacting among themselves, creates a knowledge reservoir that absorbs and releases useful customer knowledge contributed by all members of the firm over a certain time. This reservoir is a strategic resource that is inimitable and sustains firms’ competitive advantage developed from MO adoption (Hitt et al. 2001). Supported by an intrafirm social network, which is inherent in and unique to an individual firm, the knowledge reservoir is the key concept in this study that illustrates MO’s time effect on firms’ long-term performance. To test this concept, we collected a sample from 60 firms that employed a total of 1175 employees in China. Within the rapidly expanding Chinese economy, most businesses that have adopted MO have experienced intensified local market competition (Zhou, Gao, Yang, and Zhou 2005). We recorded each business’s specific length of MO adoption and modeled customer knowledge levels, MO innovations, and customer outcomes, respectively, on MO adoption time influences, as moderated by intrafirm networks (see Figure 1 for the conceptual framework).

The aim of this study is to gain empirical support for the concept of the knowledge reservoir effect of the MO time effect, moderated by intrafirm networks, by adding to the current MO as well as strategic literature a prominent role for the intrafirm network. First, we found that MO adoption time has a threshold relationship with the firm’s customer knowledge level, which in turn mediates the link of MO adoption over time to performance. We also found that an intrafirm network significantly moderates the inverted U-shaped relationship between MO time effect
and performance, as suggested by a recent MO study (Kumar et al. 2012; see Figure 1).

The following sections are organized as follows: We first describe the theoretical background of the models. Then we present the methodology, explaining our data procedures and analysis. We reflect on our findings in the last section.

THEORETICAL BACKGROUND

Intrafirm Network and Sustainable Competitive Advantage

MO adopted over time develops for firms a strong source of sustainable competitive advantage (SCA) based on knowledge (Kumar et al. 2011; Slater and Narver 1995; Kohli and Jaworski 1990), especially customer knowledge (Homburg et al. 2009), which in itself constitutes “the most critical competitive asset that a firm possesses” (Hitt et al. 2001). Firms that adopt MO earlier find out more about their customer segment than those that adopt later (Kumar et al. 2011). MO requires knowledge that directly relates to a firm’s increased capability to identify customers’ “unmet needs” in their industry and creates better-fitting products or services (Day 1994). Customer knowledge accumulates from business experiences through MO practice, which emphasizes a timely capture of a specific customer group’s profile. Customer knowledge cannot be learned from a generic school education, which provides only codified or explicit knowledge, because no business school provides a course about what a specific customer group is for a specific firm. A firm’s customer knowledge is only complete when it can piece together information from individual employees who
interact daily with customers (Homburg et al. 2009). Therefore, customer knowledge gained by adopting MO is a form of tacit knowledge that belongs to specific firms. This knowledge gives a firm clear-cut guidance on how to serve its customers well and obtain long-term customer value. In this regard, it is crucial for firms to create “strong” intrafirm networks of “collaborative working relationships” to share and save this knowledge on a daily basis—such as advice networks within a firm, in which employees gain specific information from their colleagues about customers’ needs. A “strong” intrafirm network strengthens both accumulation and retention of invaluable customer knowledge, acting as a knowledge reservoir for MO to positively influence performance.

When “unmet” customer needs or new customer segments might emerge (Day 1994), firms adopting MO may suffer a decreased volume of up-to-date knowledge about their customer groups that can be new and less known from the point of view of the firm’s previous narrowly defined “served market” (Slater and Narver 1995). For a firm that is capable of considering the future, a stronger memory of previously accumulated customer knowledge can counter such a decrease in useful knowledge. A strong intrafirm network structure can provide a foundation for such “a learning culture” (Slater and Narver 1994). This is because the capacity of intrafirm networks to contain and release such knowledge in time can naturally broaden managers’ view of the market (Hitt et al. 2001) and lead them to a better understanding of customer need changes.

In summary, for MO adoption over time, the presence of an intrafirm network structure can rhetorically act as a knowledge reservoir, which enhances knowledge acquisition capacity as well as reduces decrease of knowledge because of MO’s tendency to overlook emerging market changes. Fortunately, elements that can help
form such a reservoir exist in all forms of businesses because all organizations are networks of interactions (Krackhardt and Porter 1985). In previous research (Hitt et al. 2001), the knowledge and networks of people that have a reservoir are key determinants of firm performance; these elements eventually give MO a sustainable competitive advantage.

**HYPOTHESES**

**Threshold Effect of MO Adoption Time**

It takes time for firms to gain superior knowledge of their defined customers (Kumar et al. 2011). Firms must invest in good customer relationships and constantly sense customer needs (Day 1994). MO builds a learning capacity—a good memory that acquires and holds such knowledge (Slater and Narver 1995). Over time, firms create knowledge-based capacity, which distinguishes the firm’s market position from competitors’ (Slater and Narver 1995) and becomes its most critical competitive advantage (Hitt et al 2001).

Because MO involves ongoing customer knowledge acquisition (Homburg et al. 2009; Slater and Narver 1995), the level of customer knowledge can reasonably be considered to be a function of MO adoption time. There are two different types of knowledge acquisition for firms that adopt MO: “adaptive” and “generative” knowledge acquisition (Slater and Narver 1995, p. 66). According to previous research, firms that pursue MO may first develop a specific “served market” and focus their learning mostly on the target customers. For adaptive knowledge acquisition, firms adopting MO over time gain *incremental* knowledge within the
defined target customer group. Such a knowledge acquisition mode will bring constraints gradually to a firm’s understanding of the market and eventually creates a decreasing marginal effect of customer knowledge. In comparison, generative knowledge acquisition is based on a broad view of the market, always positioned for new opportunities in changing customer needs. This type of acquisition adds to the original increase of knowledge and will generate new insight into emerging customer needs. Generally, MO based on generative knowledge acquisition can increase a firm’s understanding of customer needs faster and eventually shine a sustaining light on a firm’s business practice. Therefore, MO adoption over time may cause either an increase or decrease in customer knowledge.

A firm’s served customer group may either enlist new members or shift to other businesses in the industry. Such a shift in customers’ needs will necessitate new learning. For example, when Apple started to attract new fans, the original innovative interface became more diversified and new information had to be learned from the increased customer group. If Apple limits itself to adaptive knowledge acquisition, still focusing exclusively on its longstanding customers, and does not consider the future of the emerging customer profile, MO adoption over time is likely to decrease the volume as well as the quality of customer knowledge. This decrease will diminish innovation efforts and even bore the longstanding customers, who may find competitors, such as Samsung, more attractive. Then Apple’s story will change.

In a turbulent market, the link over time between MO and customer knowledge may lag behind market change on account of the previously accumulated knowledge of a specific segment (Kumar et al. 2011; Gauzente 2001). There will be costs for breaking the previous framework of knowledge, which is an “unlearning” process, and then adapting it to changing customer needs. In most cases, the effects of
early adoption of MO may create a barrier to the unlearning process, according to the “core rigidity” theory (Slater and Narver 1995). This situation may occur in certain stages of MO adoption and cause a decrease in the knowledge level, but an increase in new and updated customer knowledge will follow if a rigorous generative learning approach is used (Slater and Narver 1995).

Summing up these considerations, we expect an inverted U-shaped relationship between the MO adoption time and the firm’s level of customer knowledge. Early adoption of MO may gradually increase up-to-date knowledge accumulation, but as changes emerge, a decrease will follow: Firms with an adaptive acquisition mode will decrease and finally lose their grasp of the customer need profile, whereas firms bent on generative acquisition will unlearn previous knowledge and generate new insight, so as to start a new base of customer knowledge. The pattern of such a relationship between MO adoption time and customer knowledge level can be expressed in the following hypothesis:

**HYPOTHESIS 1:** A firm’s MO adoption time has an inverted U-shaped relationship with the firm’s level of customer knowledge.

**Intrafirm Networks’ Moderator Role as Knowledge Reservoir**

To illustrate the role of intrafirm networks, this study uses the metaphor of knowledge reservoir. The implication of this metaphor is that intrafirm networks can prevent a decrease of updated customer knowledge, given its criticality and indispensability for knowledge transfer, which takes place at all stages of MO adoption (Kohli and Jaworski 1990; Hartline and Ferrell 1996). A strong intrafirm network provides indispensable support for better and faster customer knowledge sharing as a result of
MO adoption. Firms’ accumulated customer knowledge makes up the centerpiece of MO theory, which prescribes that firms shall create a strong intrafirm social network structure to benefit from it.

First, a strong intrafirm network enables faster generation and transfer of customer knowledge. Because the aim of MO is to develop an understanding of customer need that is superior to the understanding competitors possess (Day 1994), it is essential that this network be able to facilitate and increase the knowledge transfer process. Otherwise, competitors will imitate and learn just as much and the competitive advantage may gradually disappear. Second, a strong intrafirm network structure serves as a good memory of learned customer-need profiles. This memory is especially critical when there are emerging customer needs; firms will find it easier to employ previous knowledge and find a quick solution when there are sudden changes (Slater and Narver 1994). In this case, a good intrafirm network can help a firm maintain superior customer knowledge, which will eventually become the foundation of MO’s competitive advantage. Third, to avert a decrease in understanding of emerging customer needs, firms should develop generative knowledge acquisition (Slater and Narver 1994). A strong and dense intrafirm network—a structure unique to a particular firm—indicates a strong internal knowledge acquisition capacity (Tsai and Ghoshal 1998) and may increase the firm’s flow of diverse knowledge from outside knowledge sources, such as new customer groups, business counterparts, and other stakeholders (Slater and Narver 1994). According to previous research, such a network structure enhances the possibility of learning from sources both inside and outside the firm (Tsai 2001), thus forming a broadened information and knowledge flow and integrating diverse perspectives in customer need analysis. The broader and more diverse interaction network helps a firm to be more forward thinking, which
helps it to avoid becoming a slave of the “served market” by means of constant

generative knowledge acquisition (Slater and Narver 1994).

In all these aspects, a firm may gain in the long run by adopting MO if it
creates an intrafirm network that acts, in a sense, as a reservoir for customer
knowledge. Such a knowledge reservoir constantly alerts the firm about customer
needs and creates a superior competitive advantage for the firm (Kumar et al 2011;
Homburg et al. 2009). Similarly, numerous studies have displayed that intrafirm
networks are instrumental in sourcing and transferring knowledge, which creates an
enormous competitive advantage (Tsai 2001). This study, therefore, proposes that
intrafirm networks enhance the relationship between MO and the firm’s customer
knowledge level in the long run by providing a tool similar to that of a reservoir for
market-related knowledge sharing and sourcing. This reservoir role of the intrafirm
network moderates this link: The ultimate consequence is a slowing of the fall-off of
customer knowledge over the course of MO adoption. In other words, such
moderation occurs in the opposite direction of the curve of the MO and knowledge
relationship. Therefore, we posit the following hypothesis:

\[\text{HYPOTHESIS 2: An intrafirm network negatively moderates the effect of time-since-MO-adoptions on the customer knowledge level.}\]

Outcomes of MO over Time Mediated by Customer Knowledge
The link between knowledge and performance is well documented in both strategic
and marketing literature (Kumar et al 2011; Hitt et al. 2001; Tsai 2001). Knowledge
concerning idiosyncrasies of important served customer groups, application of a
specific service or product and day-to-day work routines, and tacit knowledge,
because of its unique and inimitable nature, constitute a firm’s competitive advantage and add to performance in the long run (Hitt et al. 2001). Access to diverse and unique knowledge fosters innovation in services and products because innovative ideas can always be supported and stimulated through a strong flow of knowledge and information (Tsai 2001). In particular, previous MO studies identified innovation as providing some of the most critical outcomes from MO adoption (Kirca et al. 2005; Han et al 1998).

According to MO theory, in contrast, as fundamentally a knowledge-based process, MO anticipates positive performance in innovation and customer outcomes by means of generating, sharing, and acting on customer knowledge (Kumar et al 2011; Narver and Slater 1990; Kohli and Jaworski 1990). Prior research has indicated that a better capture of customers’ needs may be more advantageous than a more individualized solution to such needs (Gwinner et al. 2005). With more detailed and in-depth knowledge of the served customer group, firms are better positioned for more active innovation in services and products. With MO adopted over time, such a knowledge-based competitive advantage grows. This knowledge reduces the cost customers may have to pay to other competitors in the market. As a result, customers develop a switching cost, and their loyalty to the firm increases (Kumar et al. 2011).

In the long run, customer knowledge accumulated in MO adoption will create higher performance in service or product innovation and thus gain more customer outcomes as well. In this study, we consider customer willingness to stay with the specific business to be an important measure of customer outcome measure, because this construct reflects a time effect of the tradeoff between benefits and the cost of customer values.
Mediation of Customer Knowledge in the Link between MO Adoption Time and Performance

Although numerous empirical findings indicate that MO has a positive effect on firm performance, most of these reports indicate that the relationship is only short term (Kumar et al. 2011). However, the aim of MO is to build an SCA for firms.

The sustainability of MO lies in its focus on knowledge, a fundamental issue proposed by early MO scholars (Kohli and Jaworski 1990; Narver and Slater 1990), who suggest that MO relies on superior knowledge of customer need through constant “sensing and linking” of information sources both inside and outside firms (Day 1994). Previous empirical works show strong support for the positive effect of knowledge on enhanced performance (Tsai 2001; Hitt et al. 2001). Marketing literature also shows that knowledge gained by adopting an MO causes innovative outcomes (Kirca et al. 2005). Some studies also show that MO develops better customer outcomes by acquiring a unique understanding of customer needs (Gwinner et al. 2005). Thus, we expect customer knowledge to act as a mediator between the moderated effect of MO adoption time on performance. We posit the following hypothesis:

**HYPOTHESIS 3:** Customer knowledge mediates the moderated link between MO adoption over time and (3a) innovative outcomes as well as (3b) customer willingness to stay.

**Controls**

Our conceptual model also includes the effects of both market-specific and firm-specific constructs to control disturbances to the model.
Firm size. According to previous research (Kumar et al. 2011) on cross-sectional data, heterogeneity and firm-specific variables can be a major problem. Thus, we use firm size as a control variable to control for a potential effect on innovative outcomes, customer willingness to stay, and the size of the firm’s customer knowledge base.

Business training. According to MO literature, training and recruiting are critical in MO adoption (Raaij and Stoelholm 2008; Ruekert 1992). Because such training provides employees with codified knowledge related to MO as well as routines to follow, this study includes business training to control for its likely positive contribution to the dependent variables. In addition, in comparison to customer knowledge, which we have deemed to be tacit and embedded in a firm’s social context (Hitt et al. 2001), this variable accounts for explicit knowledge available to employees for MO adoption.

Market changes. We also consider the effect of market turbulence as a firm-specific environmental effect, in accordance with Kumar, Subramanian, and Yauger (1998). These changes show that MO innovation outcome is related to competition and market turbulence in large measure; we controlled for both in our model. Similar effects have also been suggested and empirically tested in prior MO studies (Jaworski and Kohli 1990).
METHODOLOGY

Data Collection

We adopted a multi-source, multi-informant approach with a conventional survey instrument. This method appears to be superior in avoiding system measurement errors, such as common method bias, and has ensured consistency in previous research (Zhou et al. 2002; Van Bruggen et al. 2002). We randomly chose contacts from a large MBA club in China, the information archive of which provided us with a rich source of business contacts in the country.

The contacts from a total of 60 firms were asked to provide a complete list of employees as informants to answer the survey questions. Respondents within the firms were organized into five functional groups: top management officers, HR managers, frontline managers, support staff, and frontline employees. The top management surveys were distributed to senior-level managers, and HR managers were approached for organizational data about information regarding the firm’s MO adoption. Both senior and frontline managers gave us information about MO levels and innovative behavior. Frontline employees collected customer data from their customer bases. With informants distributed in these groups, we cross-validated the survey results to achieve a high degree of consistency and validity.

We designed a questionnaire in Chinese for each functional category, as Table 1 shows. Two academics and five business professionals from different industry backgrounds translated the original English text into Chinese. To enhance translation precision, we used the back-translation method (Douglas and Craig 1983).

For network data collection, we followed the realistic approach previously applied by Marsden (1990). We first invited senior managers to identify network
<table>
<thead>
<tr>
<th>Scale Items (all aggregated at the firm level from employee data)</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Knowledge (construct reliability: α = .691, square root of AVE = .687)</strong></td>
<td></td>
</tr>
<tr>
<td>My knowledge of different types of customers is very broad.</td>
<td>.609</td>
</tr>
<tr>
<td>Because I know a lot about customers, it is easy for me to identify different customer types.</td>
<td>.756</td>
</tr>
<tr>
<td><strong>Innovativeness (construct reliability: α = .853, square root of AVE = .65)</strong></td>
<td></td>
</tr>
<tr>
<td>Generating new ideas for difficult issues (idea generation)</td>
<td>.478</td>
</tr>
<tr>
<td>Searching out new working methods, techniques, or instruments (idea generation);</td>
<td>.733</td>
</tr>
<tr>
<td>Generating original solutions for problems (idea generation)</td>
<td>.665</td>
</tr>
<tr>
<td>Mobilizing support for innovative ideas (idea promotion)</td>
<td>.532</td>
</tr>
<tr>
<td>Acquiring approval for innovative ideas (idea promotion)</td>
<td>.613</td>
</tr>
<tr>
<td>Making important organizational members enthusiastic about innovative ideas (idea promotion)</td>
<td>.633</td>
</tr>
<tr>
<td>Transforming innovative ideas into useful applications (idea realization)</td>
<td>.721</td>
</tr>
<tr>
<td>Introducing innovative ideas into the work environment in a systematic way (idea realization)</td>
<td>.403</td>
</tr>
<tr>
<td>Evaluating the utility of innovative ideas (idea realization)</td>
<td>.754</td>
</tr>
<tr>
<td><strong>Market Change (construct reliability: α = .712, square root of AVE = .810)</strong></td>
<td></td>
</tr>
<tr>
<td>In our kind of business, customers’ product preferences change quite a bit over time.</td>
<td>.718</td>
</tr>
<tr>
<td>Our customers tend to look for new products all the time.</td>
<td>.817</td>
</tr>
<tr>
<td>Sometimes our customers are very price sensitive, but on other occasions price is relatively unimportant.*</td>
<td>−.817</td>
</tr>
<tr>
<td>We are witnessing demand for our products and services from customers who never bought them before.</td>
<td>.748</td>
</tr>
<tr>
<td>New customers tend to have product-related needs that are different from those of our existing customers.</td>
<td>.560</td>
</tr>
<tr>
<td>We cater to many of the same customers that we used to in the past</td>
<td>759</td>
</tr>
</tbody>
</table>

*In reverse order
boundaries—employees to be included in the firm network. Then we compiled a list of all network members, excluding temporary hires for office duties, and thus traced the whole firm network across all functions (Wasserman and Faust 1994). During the process, we met managers through semi-structured interviews to confirm or refine network boundaries.

The resulting sample consisted of 60 firm networks involving 1175 employees, with a mean of 20 employees for each network (only 5 firms among the 60 with a population greater than 50 or less than 20, accounting for 8.33% of the sample population, S.D. = 12.250).

Measures
In this study, we used established measures for both network and non-network data. For the non-network data, we relied on 7-point Likert-type multi-item scales and applied a factor analysis with Promax rotation. After collecting a sample from 1175 employees, all individual-level data were aggregated at the firm level (60 firms). We provide aggregate justification in the following section.

Dependent Variables

Innovation performance and customer loyalty. We applied an innovation performance measure first adopted by Janssen (2004), a multi-factor scale including statements such as, “I created new ideas for difficult issues” for idea creation, “I mobilized support for innovative ideas” for idea promotion, and “I transformed innovative ideas into useful applications” for idea implementation. Construct reliability of .853 meets the recommended criteria. To avoid common method bias, we used the cross-validation method by taking multi-informant and multi-source information from our respondents. For example, we gathered the information on this
particular scale by putting the same question to both front-line managers and front-line employees. The convergence test showed no significant differences between the two groups’ answers for each item.

Customer loyalty we use Harrison-Walker’s single dimension scale (2001), which was measured by asking frontline employees ‘how likely are customers to change brand or service provider’ (using a 7-point Likert scale).

Independent Variables

MO adoption time. This is an objective measure that recorded the length of a firm’s involvement in MO practice. We asked both senior and frontline managers to answer the question “How long it has been since your firm adopted a strategy of market orientation?” Because we used a multi-informant approach, we obtained consistency for the timeframe of MO adoption by invalidating answers that did not agree with the majority of estimates. Thus, we obtained a mean MO adoption time of 12 years (SD = 7, see Table 2).

Customer knowledge. Harrison-Walker generated a firm-level MO construct (2001) that includes two items. Questions include entries such as “Our firm designs and implements strategies based on our knowledge and understanding of customers and competitors.” Senior and frontline managers completed this portion. The reliability of this construct was α = .691.

Control variables—size, business experience, and market change. First, we measured the size of the firms in our sample. Then we measured firms’ business training based on the average time they invested in each core employee each year. In addition, we chose Market change as environmental control. Jaworski and Kohli (1993) developed this construct. We used it to assess and control for the disruption
effect of the business environment on a firm’s MO, as displayed in previous research. Market change has six items, with a Cronbach’s alpha of .712.

Network data measures. We collected network data using Marsden’s roster method (1990), providing our survey participants with a list of identified firm members. Our network question was simple and specific: “Generally who do you ask for advice when you have a work-related problem?” This question was aimed at mapping out participants’ workplace link for market-related information on a daily basis. Previous research showed that people are remarkably accurate in reporting their typical relationship patterns (Freeman, Romney, and Freeman 1987). We then constructed a network matrix to capture intrafirm advice relationship patterns, whereby we calculated the value of network density for each firm. We calculated our network data (i.e., the density of network) directly from the network square matrix from individual surveys, and it was a firm-level variable. The density calculation equation is shown in Equation 1.

Measure Adequacy
First, we assessed measure validity and then reliability by using confirmatory factor analysis with all the factors combined into a single model. Composite reliability represents the shared variance within a set of observed variables measuring an underlying construct (Fornell and Larcker 1981). Each construct met the criterion of above .6 for considerable desirability. In addition, all of the coefficient alpha values exceeded .7. Finally, the factor loadings for all factors for the model were significant ($p < .001$), which Bagozzi et al. (1991) has suggested to be a sign of good convergent validity.

We examined discriminant validity between all constructs used by performing once a time chi-squared difference test between a model in which a factor correlation
parameter was fixed at 1.0 and the original (unrestricted) confirmatory factor analysis model. Because every restricted model had a significantly poorer fit than the unrestricted model, we can conclude that the degree of discriminant validity is sufficient. We found additional evidence for discriminant validity with the AVE (average variance extracted) of each construct larger than the correlation of that construct with each of the other latent constructs, shown in Table 2. The chi-squared statistic for the confirmatory factor analysis is significant ($p < .01$). Other overall fit measures suggest that the measurement model fits the data well ($GFI = .97$, $AGFI = .97$, $CFI = .98$, $RMSEA = .05$).

**Aggregation at Firm Level**

Second, responses of individual employees were interdependent and we needed to aggregate them to the firm level (Klein and Kozlowski 2000). We computed eta-squared statistics to establish whether workers in the same firm were more similar to each other than they were to workers in other firms. For both customer loyalty and innovation behavior, eta-squared values were both significant (.28 and .30, respectively, both $p < .05$), indicating that some of the individual-level variance can be attributed to firm characteristics. We also computed intra-class correlations (ICC) for these measures. The ICC(1) measures the proportion of variance of individual-level responses that can be attributed to group-level properties (Bliwise 2000), and the ICC(2) estimates the reliability of group means (Glick and Roberts 1984). For customer loyalty, the ICC(1) was .11 and the ICC(2) was .42. For innovative behavior, these values were .13 and .48, respectively. Finally, we computed $r_{agj}$ values. The $r_{agj}$ is a measure of inter-rater agreement and is used to assess the appropriateness of aggregating the data to a higher level of analysis (James, Demaree, and Wolf 1993).
Averaged across teams, the \( r_{xyj} \) was .78 for firm-level customer loyalty and .76 for innovation performance. To conclude, aggregation to the team level seems justified.

**Modeling Strategy**

To test the conceptual model illustrated in Figure 1, we used a two-phase approach. First, we used ordinary least square (OLS) regressions to estimate (1) the effect of MO adoption time on customer knowledge; (2) the intrafirm network’s moderating effect on the effect of MO adoption time on customer knowledge; and (3) the effect of all variables on the two performance outcome variables (i.e., firm-level innovativeness and customer loyalty). During the modeling process, we also used a simple slope test to assess the differences between low and high network moderating times of MO adoption. Second, we used the PROCESS tool (Hayes 2012) to further investigate the mediating effect of customer knowledge. We performed an additional bootstrap analysis to assess the reliability of the predictors we obtained in the previous step.

Table 2 displays the means, standard deviations, and zero-order correlations of all variables in this study. Some significant and moderately sized correlations emerged. The highest correlation was between customer knowledge and innovativeness at .693 \( (p < .05) \), which is not surprising because we hypothesized that both would be positively related in the model. The others were all below .60. In our check for multicollinearity, we found the average variance inflation factor (VIF) for all variables to be 2.281 (without cross-product entries) and 6.292 (with all the cross-product entries, including the quadratic entries). The maximum VIF was 8.884. None of the VIF results showed any sign of exceeding the ceiling of 10 (Cohen, Cohen, West, and Aiken 2003). Thus, we did not find problematic multicollinearity for the variables in our modeling procedure.
Finally, we also checked for violations of assumptions concerning the normality, or homoscedasticity, of residuals. A Durbin-Watson test produced satisfactory results for the independence of error terms. We performed bootstrapping to validate our model estimates. Then we compared the confidence intervals of estimated coefficients that we obtained from the two-stage modeling with bootstrapped ones. As a result of this comparison, we found our model to be empirically robust.

RESULTS

Tables 3a and 3b show the results of the regression analysis. Model 1 includes MO adoption time (MOT) and all three control variables, indicating that MOT bears no statistically significant direct linear relationship with Customer knowledge. Then, in Model 2 we entered Network effect and its cross product with MOT. In Model 3 we entered MOT$^2$ and its product with network density. For Model 3, we included both the products and main effects of corresponding variables to test the moderating effects. Furthermore, to test the models of mediation from MOT to MO performance and moderation of the link of MOT to customer knowledge (CK), we transformed the variables into a z-score and then estimated their cross products. Using standardized z-scores in interaction terms allows for them to be directly interpreted in relationship to the means of the interacted variable; it also reduces multicollinearity (Cohen and Cohen, 1983, p. 325).
## TABLE 2: Mean, Standard Deviation, and Correlation of Variables

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Customer loyalty</td>
<td>2.28</td>
<td>.83</td>
<td>.230</td>
<td>.410</td>
<td>- .002</td>
<td>.276</td>
<td>.085</td>
<td>- .496*</td>
</tr>
<tr>
<td>2</td>
<td>Innovativeness</td>
<td>4.17</td>
<td>.52</td>
<td>.693**</td>
<td>.016</td>
<td>- .132</td>
<td>.488**</td>
<td>- .024</td>
<td>.023</td>
</tr>
<tr>
<td>3</td>
<td>Customer Knowledge</td>
<td>4.11</td>
<td>.61</td>
<td>.140</td>
<td>- .046</td>
<td>.451**</td>
<td>- .097</td>
<td>.255</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MO adoption time</td>
<td>12.63</td>
<td>7.14</td>
<td>.010</td>
<td>.141</td>
<td>.082</td>
<td>.207</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Firm advice network density</td>
<td>.15</td>
<td>.14</td>
<td>- .149</td>
<td>- .291*</td>
<td>.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Market change</td>
<td>4.03</td>
<td>.67</td>
<td>.076</td>
<td>.105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Firm size</td>
<td>19.58</td>
<td>12.25</td>
<td>- .226</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Training</td>
<td>1.66</td>
<td>1.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Correlation is significant at the .05 level (2-tailed).

**Correlation is significant at the .01 level (2-tailed).
Network Moderation

We first tested Hypothesis 1, which suggests an inverted U-shaped relationship between MOT and CK. As we added the quadratic term of MOT to the equation in Model 3, the first-order cross product between MOT and density remained positive and significant ($\beta = .438, p < .01$ for Model 2 and $\beta = .490, p < .01$ for Model 3). Supporting Hypothesis 1, the squared term of MOT is negatively significant both in Model 3 ($\beta = -.804, p < .10$) and Model 5 ($\beta = -.740, p < .10$).

To test Hypothesis 2, Model 2 adds the network effect and its first-order cross product with MOT, which is significant ($\beta = .438, p < .01$). The significance for the same coefficient estimate is further shown in Model 3 ($\beta = .490, p < .01$) because we entered $\text{MOT}^2$ and a cross product between MOT squared with network effect (see Equation 1). The MOT squared cross product term for network effect is also significant ($\beta = .433, p < .05$). To facilitate interpretation, we plotted the relationship between MOT and CK for high and low intrafirm network density effects. As Figure 2 shows, the direction of the moderation is as expected. In addition, when there is a low level of network density, there is an obvious steep decline in CK level with low network effect, which quickly diminishes to almost zero. In contrast, when there is a high level of network density, the CK level shows an obviously delayed downward trend as in the case of high level network density. We also observed that at a certain interval of network strength, CK with lower network density picks up more quickly than that with higher network density; the slope’s incline is just as steep as its decline. One interpretation is that in firms with higher network density, new knowledge may take more time to set in. This argument is in line with a previous study on tacit knowledge, which emphasizes the “cost” of acquiring such knowledge when it is highly socially embedded (Hitt et al. 2001). The “cost,” though—also apparent in our
study—is later replaced with a quick pickup, whereas a CK level with low network embeddedness declines rather sharply. Therefore, the advantage of possessing a strong intrafirm network is evident in the sustained high level of CK over an apparently longer term, which indicates that for firms with higher network effects, learning memory of such CK lasts longer, and they are able to support higher performance in the long run.

The central issue for this study is how MO adoption can impose a longer effect on CK level and enjoy a sustainable competitive advantage. In this case, an indication of an intrafirm network’s role in sustaining such a knowledge-based advantage is supported, which we metaphorically refer to as the sustaining power of the “knowledge reservoir” from a strong intrafirm network.

**Mediating Effect of Customer Knowledge**

To investigate the mediating role of CK between MOT and performance, we first assessed a set of simple regression in phase I of the modeling. These included MOT on performance and CK on performance. The coefficient estimates for CK on both performance variables, Innovation and Loyalty, are statistically significant; that of MOT on performance is positive but not significant—this is consistent with its effect being mediated by customer knowledge. The estimate for the MOT squared term in the link of MOT to customer loyalty seems to show a slight significance ($\beta = -0.804, p < .10$), indicating partial mediation (Hayes and Preacher 2010).

Our results are in line with the recent study by Kumar and colleagues (2011) in suggesting a similar direct quadratic effect of MOT on performance. However, there are differences. First, the previous study did not account for the effect of CK; second, its performance outcome variables were Sales and Profitability. Because
previous marketing literature (Kirca et al. 2005) considered customer loyalty to be positively related to a firm’s long-term profitability, we posited Hypothesis 3a and 3b to reinforce the mediating role of customer knowledge in the link between MO adoption time and performance. In addition, this is a partial mediation of the customer knowledge link between MO adoption time and customer loyalty.

Findings from Controls
Throughout the modeling process, a significant role of market change remains evident from Model 1 through Model 4 ($\beta = .441, p < .01; \beta = .452, p < .001; \beta = .471, p < .001$; and $\beta = .212, p < .10$ for Model 1 through Model 4, respectively), which depicts market change as an important environmental element for firms that are becoming more knowledgeable about customers and more innovative. The model estimation results also indicate the significance of another control variable—training—which is connected with empirical findings about training’s influence in delivering an MO effect on performance ($\beta = .315, p < .05$ for Model 2 and $\beta = .312, p < .05$ for Model 3). These results also seem to show effective control for MO-related knowledge acquisition that can be codified rather than be more complex and embedded in a social context (Hitt et al. 2001). Firm size seems to be related only to customer loyalty ($\beta = -.480, p < .001$), indicating a direct negative influence of firm size on the MO, customer knowledge and performance chain. A possible interpretation is that firms may become less efficient in customer knowledge application in response to organizational hierarchical barriers (Harris 2004).
### TABLE 3A: MO Adoption Time Impact on Firm MO, Moderated by Intrafirm Network

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Customer Knowledge</th>
<th>Innovativeness</th>
<th>Customer Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>(Constant)</td>
<td>Beta</td>
<td>SE</td>
<td>Beta</td>
</tr>
<tr>
<td>Customer knowledge</td>
<td>-.018</td>
<td>.123</td>
<td>-.012</td>
</tr>
<tr>
<td>MO adoption time (MOT)</td>
<td>.044</td>
<td>.127</td>
<td>-.176</td>
</tr>
<tr>
<td>Network</td>
<td>-.049</td>
<td>.122</td>
<td>-.283</td>
</tr>
<tr>
<td>Network*MOT</td>
<td>.438**</td>
<td>.144</td>
<td>.490**</td>
</tr>
<tr>
<td>MOT²</td>
<td>-.804*</td>
<td>.429</td>
<td>-.186</td>
</tr>
<tr>
<td>Network*MOT²</td>
<td>.433*</td>
<td>.218</td>
<td>-.004</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>-.105</td>
<td>.131</td>
<td>-.012</td>
</tr>
<tr>
<td>Market change</td>
<td>.441**</td>
<td>.125</td>
<td>.452***</td>
</tr>
<tr>
<td>Training</td>
<td>.179</td>
<td>.127</td>
<td>.315*</td>
</tr>
<tr>
<td>Model Fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R squared</td>
<td>.390</td>
<td>.375</td>
<td>.445</td>
</tr>
<tr>
<td>Adj. R squared</td>
<td>.088</td>
<td>.299</td>
<td>.350</td>
</tr>
<tr>
<td>R squared change</td>
<td>.152</td>
<td>.375</td>
<td>.069</td>
</tr>
<tr>
<td>F change</td>
<td>2.390*</td>
<td>4.905**</td>
<td>2.941*</td>
</tr>
</tbody>
</table>

CV = control variable

Standardized beta

** Significant at the .005 level (2-tailed)

*** Significant at the .001 level (2-tailed)

† Significant at the .10 level (2-tailed)
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Innovation</th>
<th>Customer Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 6</td>
<td>Model 7</td>
</tr>
<tr>
<td>Outcome Variable</td>
<td>Beta</td>
<td>SE</td>
</tr>
<tr>
<td>Constant</td>
<td>.020</td>
<td>.111</td>
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<tr>
<td>Network</td>
<td>-.283</td>
<td>.172</td>
</tr>
<tr>
<td>Network*MOT</td>
<td>.190</td>
<td>.140</td>
</tr>
<tr>
<td>MOT</td>
<td>-.804*</td>
<td>.429</td>
</tr>
<tr>
<td>Network*MOT²</td>
<td>.433***</td>
<td>.218</td>
</tr>
<tr>
<td>Customer knowledge</td>
<td>.660****</td>
<td>.127</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market change</td>
<td>.471****</td>
<td>.117</td>
</tr>
<tr>
<td>Training</td>
<td>.312†</td>
<td>.125</td>
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<tr>
<td>Firm size</td>
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<tr>
<td>Model fit</td>
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<tr>
<td>R squared</td>
<td>.518</td>
<td>.325</td>
</tr>
<tr>
<td>F change</td>
<td>3.582*</td>
<td>4.129†</td>
</tr>
</tbody>
</table>

*Significant at the .05 level (2-tailed)
**Significant at the .01 level (2-tailed)
***Significant at the .001 level (2-tailed)
†Significant at the .05 level (2-tailed)
FIGURE 2: Customer Knowledge with High and Low Intrafirm Network Density: The Reservoir Effect

- Label unit on X axis: year
- **Label unit on Y axis: level of standardized scores**
DISCUSSION

This study is the first to use a network perspective to investigate MO’s long-term impact on firms’ customer knowledge as well as performance. Its central argument is that an intrafirm network acts as a knowledge reservoir, moderating the chain of MO adoption time to customer knowledge and then to performance. A prior study has suggested that an SCA theoretically derived from MO is “complemented” or sustained by an “appropriate structure” (Slater and Narver 1995). This is because MO is based on a firm’s ability to acquire and accumulate market knowledge (Day 1994). Firms accumulate customer knowledge through MO adoption over time, which is embedded in and released from social networks for ongoing customer identification (Homburg et al. 2009). This function can best be described as a knowledge reservoir, which denotes the social embeddedness of customer knowledge because of its tacit nature (Hitt et al. 2001).

The reservoir effect of an intrafirm network is embodied in its sustaining strength in the MO adoption time effect on customer knowledge level, as evidenced in the two-phase modeling estimations in this study. In the following sections, we discuss the findings and their research significance as well as their limitations.

Two Key Findings

The theoretical contributions of this study are (1) support for MO’s long-term impact on performance by suggesting a mediating role of customer knowledge in MO adoption time and performance relationship; (2) a proposal to strengthen and sustain the role of an intrafirm network in the specific link from MO adoption time to knowledge in the whole SCA transformational chain.
The first finding provides a conceptual setting, which is in line with recent and earlier research on MO as a source of SCA, which centers on knowledge acquisition and its strategic application (Kumar et al. 2011; Slater and Narver 1995; Day 1994). The second finding is probably the key contribution of this study, illustrating the role of knowledge as the most salient link in the whole chain of MO, transforming a firm’s SCA.

**The Chain of MOT, Customer Knowledge, and Performance**

The main feature of the first finding is an inverted U-shaped relationship between MO adoption time and customer knowledge. The results of MO adoption over time can be either an increase or a decrease in knowledge of customer need. The key argument for this inverted U-shaped relationship lies in the mode of knowledge acquisition in MO adoption—namely *adaptive and generative knowledge acquisition*. The former limits a firm’s SCA development by imposing an incremental knowledge in a narrowly defined “served market.” In contrast, the latter adopts a much broader view of customer needs, encompassing emerging opportunities in market changes (Slater and Narver 1995).

Furthermore, the positive impact of MO on firm performance in the long run is realized through the critical link of customer knowledge. This argument seems to be supported by previous research by Homburg and colleagues (2009). However, their research did not discuss the time effect of MO adoption, whereas ours contributes directly to the issue of MO as a source of SCA.

**Intrafirm Network for More Sustainable MO Impact: The Knowledge Reservoir**

Our empirical findings support the argument that intrafirm network density moderates the influence of MO in the long run: When MO-derived customer knowledge
decreases over time, a dense intrafirm network will reduce the speed of such a downward trend.

According to Slater and Narver’s organizational learning perspective, MO depends on a firm’s capacity to acquire knowledge (1995). Several other studies mention this knowledge acquisition viewpoint, and they have a common interest in MO’s focus on market knowledge (Day 1994; Homburg and Pflesser 2000; Kumar et al. 2011). Such arguments imply that there is a synergetic effect between social interaction and MO adoption, which is the key issue of this study.

So far, MO literature has little to offer on how knowledge, as a socially embedded asset, links MO adoption time with performance. This study contributes to a better understanding of how MO, adopted over time, can become an SCA through customer knowledge acquisition. The empirical model indicates that MO may develop into an SCA with knowledge acquisition, which is contingent on the strength of an emergent intrafirm network.

Managerial Implications

First, the key findings in this study provide managers with fresh insights into managing the way in which MO can be exploited effectively. The MO philosophy has already gained wide recognition among managers, but the ways to acquire maximum benefits are still being explored (van Raaij and Stoelhost 2008). Generally, managers invest in employee training to enhance their MO and ability to generate and share customer knowledge. In view of this study, we suggest that it is important to develop a generative knowledge acquisition approach so that firm employees can have a broad view of customer needs and changes in the emerging market. Only through a quick
capture of such knowledge can managers develop and maintain a superior competitive edge in the market.

Second, training is not enough. Training may provide already codified knowledge, but the majority of customer knowledge, possessed by the firm as a whole, is embedded in the firm’s social context. Therefore, managers are advised to pay more attention to cultivating a dense intrafirm social network, whereby employees may more effectively and efficiently transfer their individual knowledge to other colleagues.

Limitations and Further Research
We recorded the snapshot effects of MO adoption time with a cross-sectional data set and also addressed problems of heterogeneity by controlling for firm-specific elements. However, one limitation of our findings the lack of a data set of longitudinal, duplicated measures that provides a clear track of variance under the influence of time. The time effects we studied in our model are one-point observations, as a result of years of management efforts. But we do not know how each firm developed its independent MO level and performance at different stages of the MO adoption timeframe. Thus, further studies may benefit from a time series of data. We would expect a difference in MO sustainability if we had a more widely distributed industrial background. Replications with samples from a wider range of industries would add to the generalizability of our model.
APPENDIX:

EQUATION 1 Measure of Firm-Level Network Density

\[
D_k = \sum_{i=1}^{N_k} \sum_{j \neq i} \frac{Z_{ij}}{\max(Z_{ij})} \left(N_k \times (N_k - 1) \right)
\]

where \(Z_{ij}\) is the strength of the tie between firm member \(i\) to member \(j\).

\(\max(Z_{ij})\) is the strongest of \(i\)'s reported ties to anyone in the firm.

\(N_k\) is the number of members in firm \(k\).

\(N_k \times (N_k - 1)\) is the maximum possible number of ties among members of firm \(k\).

Note:

According to previous research (Reagans, Zuckerman, and McEvily 2004), scaling by \(\max(Z_{ij})\) can remove individual differences in the tendency to report overly high tie strength to others. Network density varies from 0 to 1, with 0 indicating no relationships between firm members exist and 1 indicating that every possible relationship occurs, all at their maximum strength.
CHAPTER 4: HOW TO TRANSFORM SERVICE EMPLOYEES’ MARKET ORIENTATION BEHAVIORS INTO INNOVATION

Understanding the Role of Intrafirm Network Centrality³

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³ Also presented at AoM 2012 conference and collected in the conference proceedings, Boston, USA, August 2012. Presented at 2013 AMA SIG of Entrepreneurial Marketing. Thanks to Nicole Covello, Uslay Can, Glenn Omura, and other SIG participants for their comments.
ABSTRACT

Social interaction networks within firms enable service employees to transform market orientation behaviors into innovations. However, few studies have investigated this mechanism. Using insights from social network theory, this study attempts to explain employees’ innovation under the influences of two types of intrafirm networks of social interactions: advice networks and friendship networks. The results demonstrate that advice-network centrality strengthens the effect of individual-level market orientation behaviors on employees’ innovation, whereas friendship-network centrality has no such effect.
INTRODUCTION

Marketing scholars suggest that a market orientation (MO) steers firm efforts to innovate and create business success (Kirca et al. 2005; Hurley and Hult 1998; Kohli and Jaworski 1990; Han et al. 1998). MO refers to a firm’s ability to collect, generate, and respond to market and customer need information (Kohli and Jaworski 1990). According to previous research, MO relies on individual employees generating and using such information through their social interactions within organizations (Desphande and Webster 1989; Kohli and Jaworski 1990; Narver and Slater 1993; Homburg et al. 2009). An effective MO requires an attitude that is open to new ideas and change (Kohli and Jaworski 1990); this leads to innovation (Han et al. 1998). Marketing scholars suggest that well “developed and circulated” customer- and market-related information flows among employees create “open communication channels” (Kohli and Jaworski 1990, p. 9), which are prerequisite for innovation to emerge from MO (Han et al. 1998, p. 35). Such interactions enable exchanges of information regarding customer needs and competitor behaviors and provide employees with insights that individually and cumulatively can create better and new solutions. They are therefore central to understanding how MO behaviors (Narver and Slater, 1990) translate into innovation outcomes (Ibarra et al. 2005). However, until recently, few studies in MO literature have explained this important role (cf. Lam et al. 2010).

Innovation is especially critical for service businesses in which employees have a high degree of autonomy and innovation is critical for business success (Cadwallader et al. 2010; Rust et al. 2004; Liao and Chuang 2004). Service firms
benefit strongly from individual employees who are keen to acquire customer- and competitor-related information, exchange ideas, and turn these into adaptive service offerings (Gwinner et al. 2005). Their positions in social interaction networks, indicate how they are connected to other employees, influence their capability to transform MO behaviors into innovations. Previous research in network and innovation provides ample evidence for the critical role of intrafirm networks and network positions as a means to successfully share and transfer information and knowledge (Ibarra 1993; Sparrowe et al. 2001; also see the next section of this study). Surprisingly, current MO literature has not explained how intrafirm networks and network positions relate to individual employees to transform MO to individual-level innovation.

This study investigates the influence of employees on two distinct intrafirm networks—namely friendship (affective ties) and advice (workplace mentoring ties)—as the key communication channels that employees use to interact with each other (Brass 2004). We developed a conceptual model to explain how friendship and advice networks may affect the link between MO and individual innovation outcomes. Using a sample of 1175 individual-level observations nested within 60 service firms, we tested this conceptual model.

This study contributes to current MO literature in three main aspects. First, it explains the link between employee adoption of MO and employee innovative behavior within the network positions employees take in daily social interactions, thereby introducing a new theoretical perspective that responds to recent research calls in the MO research area (Lam et al. 2010; Homburg et al. 2009). Second, this study investigates the role of MO at the individual employee level rather than
dwelling on the firm level (Han et al. 1998) and provides insights into the modus operandi that studies at an aggregate level cannot capture (Sauermann and Cohn 2010). The analysis of employees’ MO behaviors and their network positions shows which employees contribute most strongly to firm innovation and to what degree employees can leverage their position networks. Third, this study also distinguishes between two types of intrafirm networks, showing that the relationship networks formed by workplace advice giving can differ from those of friendship in their influences on employees’ MO-to-innovation transformation.

This study is organized as follows: We first describe the theoretical background and then, in the methodology section, explain our research design and data collection procedures. To test the conceptual model, we present the model estimation results and analysis. Then we conclude with an examination of the main findings and analyze the managerial and theoretical implications.

**NETWORK EMBEDDEDNESS, MO, AND INNOVATION**

Employees who must execute MO and generate innovative solutions are embedded in intrafirm (within firms) networks of social interactions. MO literature has shown the importance of intrafirm social interaction for better diffusing MO among employees for a firm’s business success (Lam et al. 2010; Kohli and Jaworski 1990). This is because the “linking and sensing capability” (Day 1994) of MO relies on the interactions between employees who actually embrace and practice the MO. Such interactions occur among employees who are embedded in intrafirm networks. The intrafirm networks (employees’ social networks within firms) act as bundles of relational ties and allow employees to access both new and programmed information
(Tsai and Ghoshal 1998), which may induce more appropriate responses to customer needs.

This study focuses on informal rather than on formal ties, because informal ties are more important for innovation (Ibarra 1993). Compared with formal relationships, informal relationships are more likely to define the actual pattern of interaction within the firm (Ibarra 1993). Kanter and her colleagues (1988) show evidence that informal intrafirm networks provide information and support for innovative behavior that is not possible through formal organizational devices, such as formal training and coaching through hierarchical instruction. This study focuses on information exchanged among employees about customers’ needs (Day 1994), which some employees become aware of from employee–customer “interface” (Homburg et al. 2009). Such information is often tacit and cannot be easily codified. Because it often resides within individuals, social interactions facilitate information exchanges among employees (Tsai 2001). Employees cannot easily obtain this information elsewhere so therefore need interactions with their colleagues to share this knowledge.

In addition, because customers’ needs differ largely either because of their diverse backgrounds or because of changing service contexts, individual employees may have diverse information or knowledge about their customers. Therefore, employees’ endeavors to execute MO must be based on generating and sharing such information or knowledge on a continuous basis; they need to frequently interact with their customers as well as colleagues (Homburg et al. 2009) to combine, update, and transform information into novel knowledge that is necessary for innovation.

* Whereas *formal* relationships are mandated and “planned” by the organization, such as hierarchical relationships displayed in an organizational chart, *informal* relationships include “interpersonal relationships in the organization that affect decisions within it, but either are omitted from the formal scheme or are not consistent with that scheme” (Simon, 1976, p.148).
Employees who take on a more central position within the intrafirm network can paint a fuller picture of customer needs and leverage this knowledge to create new products and services.

**The Effect of Employee-Level MO on Innovative Behavior**

Kohli and Jaworski (1990) suggest that MO comprises three behaviors: generating, sharing, and responding to customer need information. As a behavioral construct, MO creates innovative outcomes for business (Kirca *et al.* 2005; Han *et al.* 1998) by encouraging “doing something new or different in response to market conditions” (Kohli and Jaworski 1990, p. 12). Embedded in intrafirm networks, employees generate information about customer needs and business competitions and share it with other employees. The ultimate aim of MO is to respond with more effective solutions by adapting to such knowledge (Kohli and Jaworski 1990). Thus, it is logical that the more employees engage in MO activities, the more they will generate, share, and respond to customer needs and market information, and the more innovative they will become toward customers, because they will have a better understanding of customer needs and know-how to appropriately respond to diverse demands (Lukas and Ferrell 2000). This information sharing happens especially in service settings, when adaptation of business offerings to customer needs depends on continuous intrafirm as well as employee-customer interactions (Cadwallader *et al.* 2010; Gwinner *et al.* 2005; Liao and Chuang 2004). Therefore, we propose the following:
HYPOTHESIS 1: An employee’s level of MO has a positive impact on the employee’s innovation.

Moderating Effects of Network Embeddedness on the Link Between Employees’ MO Behavior and Innovation

Employees may capitalize on their network centrality such that those with more central positions are more productive in transforming their MO behaviors into innovation. An employee can be more efficient and effective in transforming MO into innovative behavior when he or she has been embedded in a network position with ties to many other colleagues. There are several reasons for this. First, employees in central network positions are capable of getting more diverse or more frequently updated information about customers from their colleagues through these networks and thus capture a better sense of customer needs (Narver and Slater 1995). Second, central employees are often ascribed a certain status, which gives them greater credibility as information sources for their colleagues (Ibarra 1993). To actually put innovative measures into action, it is critical to be convincing and trustworthy in the eyes of one’s colleagues for the sake of getting support from them and to be able to gather the needed resources to execute the innovation. Fellow colleagues are more likely to share valuable information when they trust each other (Klein et al. 2004). Finally, being more central than others, these employees can access and use more organizational sources by virtue of their positions (Van de Ven 1986). Given that the translation of inventions to innovations is a social–political process, being more central can boost innovations by summoning more support from colleagues. In general, employees in central positions can more efficiently and effectively transform
MO behaviors into innovation than those at less central positions by combining wider and more up-to-date informational resources and tapping into power sources (Ahuja and Lampert 2001; Ibarra 1993; Van de Ven 1986).

*Two Different Types of Networks: Advice versus Friendship Networks*

Informal intrafirm networks may have different relational purposes—either *instrumental* or *affective* (Klein et al. 2004). The outcomes of network centrality can differ because of the diverse contents of interactions. For this study, we distinguish between influences from advice (instrumental) and from friendship (affective) network embeddedness on service employees’ MO toward innovative behavior transformation.

Although advice and friendship networks both give employees access to information, they operate differently given the nature of information flow. An advice network supports *task-related* information exchange for *existing* knowledge and information from colleagues and helps workers share resources such as “information, assistance and guidance” (Sparrowe et al. 2001). In contrast, a friendship network provides information beyond the constraints of daily tasks because friends tend to trust each other more (Klein et al. 2004) and tend to respond to each other’s requests for global information. This network can provide an even richer spectrum of customer information. In comparison with an advice network, a friendship network allows for informal information that people share only with friends. Such information can be especially beneficial in the formation of new and unique approaches to customer needs, which usually are perceived as more risky (Klein *et al.* 2004). Moreover, a friendship network provides connections that encourage affection and acceptance among colleagues. This kind of network can strengthen actions among members in
the same organization (Klein et al. 2004). In summary, friendship networks can allow access to unique and novel informational resources because they relate to more influential power and summon more support for innovation within the firm.

**Moderating Effects of Advice- and Friendship-Network Centrality on the Link Between MO and Innovation**

Centrality captures how connected an employee is with others in the network (Ibarra 1993; Sparrowe et al. 2001), and it illustrates the advantages, such as access to more diverse information. Such advantages can enable employees to more easily leverage MO activities into innovative outcomes, mostly through more adequate and novel solutions, using the power and influence that accompany various positions in the network (Ahuja and Lampert 2001).

However, networks are not all the same. A central position in advice networks can increase the strength of an individual-level MO-to-innovation link, because it ensures information that are available on immediate request, thereby increasing the capacity for (re)-combining existing knowledge for innovation (Ahuja and Lampert 2001). Service providers constantly need to generate adaptive solutions to customers’ changing demands (Gwinner et al. 2005), whereas ready access to information can help service providers anticipate customers’ future needs (Slater and Narver 1995). In service settings, employees may well benefit from access to customer information through existing network ties, obtaining a richer and broader view of ever-changing customer needs and effectively adapting to these by including innovation in their offerings (Cadwallader et al. 2010; Rust et al. 2004). Higher centrality in an advice network tends to also attract more specialized and task-related information flow (Sparrowe et al. 2001), which allows individuals to increase the effectiveness of their
MO behaviors to generate innovation. With better access to task-related customer-
need knowledge, employees who gain a central position in an advice network tend to
enjoy more authority in task-related issues among colleagues. Such a privileged
network position yields organizational support from colleagues, and this leads to
easier implementation of innovation.

In contrast, individuals who are in a central position in a friendship network
may also benefit from higher trust from other employees, making it easy for them to
bargain with colleagues with similar levels of MO behaviors to acquire information.
Besides, because friends are more willing to share new and valuable information with
each other (Klein et al. 2004; Sparrowe and Liden 2005), employees who search for
novel insights may gain more diverse customer needs information from colleagues
with whom they have friendships. Third, employees who are central in a friendship
network may acquire additional convincing power through access to new non-task-
related knowledge, which is diverse and broad. In turn, this advantage helps them gain
more popularity among colleagues because of the “reputational” status attributed to
them by others (Ibarra 1993, p. 476). Thus, when implementing a new solution, the
colleagues of this employee will be more risk tolerant because they perceive this
employee as being trustworthy and credible. However, being central in a friendship
network may increase an employee’s tendency to copy others (Brass 2004), which
may attenuate his or her ability to innovate.

In summary, the central position in either a friendship or an advice network
can increase the chances of both combining MO-related information and leveraging
relational ties into more actionable solutions because the impact may vary across
network types. In a more central position in either an advice or a friendship network,
employees have a better chance to convince others (Jansen 2004; Ibarra 1993), gain support from their colleagues, and put novel solutions into practice, so as to adapt to changing customer needs. Thus, this study investigates how the causal link of an employee’s overall MO to innovative behavior can be strengthened by a higher centrality in both a friendship and an advice network. We posit the following hypothesis:

**HYPOTHESIS 2:** The relationship between an individual-level MO and individual-level innovative behavior is strengthened by advice-network centrality (a) as well as friendship-network centrality (b).

**Conceptual Model**

Figure 1 presents our conceptual model. It posits that the positive main effect of employee MO behaviors on Employee innovation is moderated by the centralities of both an advice network and a friendship network. In our conceptual model, we also added relevant control variables to provide a more complete test of our hypotheses. We measured firm-level reward systems to account for differences in MO outcomes caused by differences in firm-level MO-based reward systems (Kohli and Jaworski 1990). We also took into account the gender and tenure of employees, because these could have affected the outcomes. Gender differences can occur at the individual level of managerial instruction adoption (Babin and Boles 1998) and affect innovation outcomes (Ibarra 2005), whereas tenure has a significant effect on individual-level behavioral consequences of MO (Ruekert 1992). Prior research has found tenure to be
an important source of power and support within firms because of its connection with seniority status and expertise (Ibarra 1993).

**METHODOLOGY**

**Data Collection**

We adopted a multi-source, multi-informant approach by using a conventional survey instrument in order to reduce common method variance (Zhou et al. 2002; Van Bruggen et al. 2002). For example, we gathered the information on particular scales by putting the same question to both front-line managers and front-line employees. With informants distributed within these two groups across different firms, we cross-validated the survey results so as to ensure high consistency and validity. The convergence test showed no significant mean differences between the two groups’ answers to the same statement for each item. We chose firms randomly from a large
MBA club in China, the archive of which provided us a rich source of business contacts in the country. These MBA contacts helped us locate firms, which in most cases were their own employers. The businesses all operate in the service industry and have a strong focus on retail and trade businesses (about 30%). We collected a net sample of 60 firms after approaching 224 service firms to request network data (response rate: 26.8%). The firms of interest are mostly small firms with only 20 to 30 employees (only 8% of the 60 firms have fewer than 20 employees or more than 50 employees), making the sample suitable for complete network measurement (Sparrowe 2001). Because the network data are key predictors in this research, a response rate of more than 80% for each participating firm was necessary to ensure data validity (Wasserman and Faust 1994; Sparrowe et al. 2001).

The 60 firms provided data on intrafirm networks involving 1175 employees, all in clearly defined network matrices including both intrafirm advice-relationship and friendship-network patterns. For non-network constructs, we asked the responding firms for an entire roster of employees who could answer the survey questions. We organized the respondents within the firms into five functional groups: top management, HR managers, frontline managers, support staff, and frontline employees. We asked senior-level managers or HR managers about MO-based reward systems. We also approached HR managers specifically to request organizational data about the firm (such as “length of employee service of individuals” for tenure). To study individual-level MO behaviors and innovative behavior, we chose frontline employees, senior managers, and frontline managers as informants.
Measures

We used established measures for both network and non-network data. Table 1 displays the validity and reliability of the constructs, as well as the corresponding items. Although literature sometimes presents market orientation as a single construct, some studies describe it as consisting of three components: the acquisition of market information, the sharing of market information, and strategically responding on the basis of this market information. Therefore, some literature employs a one-factor MO construct and other literature employs a three-factor MO construct. We used AMOS 18.0 to assess construct validity and reliability by first conducting confirmatory factor analysis with all five constructs (i.e., innovation, MO reward system, and individual-level MO as three factors). Although we found the chi-squared statistic for the confirmatory factor analysis to be significant ($\chi^2_{ss} = 2116.39, p < .01$), the other overall fit measures indicate reasonable measurement fit (CFI = .89, TLI = .88; RMSEA= .058). We established that convergent validity as the size and significance of the factor loadings ($p < .001$) was high. The average variance extracted (AVE) of the constructs—except for MO rewards system—was also higher than the recommended level of .50 (Fornell and Larcker, 1981). We also examined discriminant validity between the five constructs by performing a separate chi-squared difference test between a model in which we fixed a factor correlation parameter at 1.0 and the original (unrestricted) confirmatory factor analysis model. Because each restricted model had a significantly poorer fit than the unrestricted model, we found evidence for discriminant validity; all $\Delta \chi^2_{(1)}$ were greater than 3.84 ($p < .05$). We found further support for discriminant validity between the MO constructs on the one hand and the other constructs on the other hand, because the square root of the AVE
### TABLE 1: Measurement Items with Validity and Reliability Analysis

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Individual Market Orientation Behavior</th>
<th>Market Information Generating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I ask people who used our product or service to assess the quality.</td>
<td>I interact with people—either directly from customers or agencies (distributors)—to know what product or services customers will need in the future.</td>
</tr>
<tr>
<td></td>
<td>In my communications with these people, I periodically review the likely effect of changes in our business environment (e.g., company mergers and acquisitions) on customers.</td>
<td>I take responsibility to detect fundamental shifts in our business (e.g., competition, technology, regulation) in my communication with distributors.</td>
</tr>
<tr>
<td></td>
<td>I talk to or survey those who can influence our customers’ purchases (distributors).</td>
<td>I review our product development efforts with distributors to ensure that they are in line with what customers want.</td>
</tr>
<tr>
<td></td>
<td>I participate in informal “hall talk” that concerns our competitors’ tactics or strategies.</td>
<td>I participate in interdepartmental meetings to discuss market trends and developments.</td>
</tr>
<tr>
<td></td>
<td>I collect industry information through informal means (e.g., lunch with industry friends, talks with trade partners).</td>
<td>I let appropriate departments know when I find out that something important has happened to a major distributor, market, or customer base.</td>
</tr>
<tr>
<td></td>
<td>I pass on information that could help company decision makers to review changes taking place in our business environment.</td>
<td>Market Information Sharing Behavior</td>
</tr>
<tr>
<td></td>
<td>I communicate market developments to departments other than marketing.</td>
<td>I communicate with our marketing department concerning market developments.</td>
</tr>
<tr>
<td></td>
<td>I try to circulate documents (e.g., e-mails, reports, newsletters) that provide information on my distributor contacts and their customers to appropriate departments.</td>
<td>Market Information Response</td>
</tr>
<tr>
<td></td>
<td>I coordinate my activities with the activities of coworkers or departments in this organization.</td>
<td>If a customer has a problem with our product or service, I try to find some way or some person to solve the problem.</td>
</tr>
<tr>
<td></td>
<td>I try to help customers/distributors achieve their goals.</td>
<td>I respond quickly if a customer/distributor has any problems with our offerings.</td>
</tr>
<tr>
<td></td>
<td>I take action when I find out that customers are unhappy with the quality of the service or product.</td>
<td>I jointly develop solutions for customers with members of our customer/adviser relationship team.</td>
</tr>
<tr>
<td></td>
<td>MO-Based Reward System</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No matter which department they are in, people in this business unit get recognized for being sensitive to competitive moves.</td>
<td>We use customer polls for evaluating our employees.</td>
</tr>
<tr>
<td></td>
<td>Customer satisfaction assessments influence senior managers’ pay in this business unit.</td>
<td>Formal rewards (i.e., pay raise, promotion) are forthcoming to anyone who consistently provides good market intelligence.</td>
</tr>
<tr>
<td></td>
<td>Formal rewards (i.e., pay raise, promotion) are forthcoming to anyone who consistently provides good market intelligence.</td>
<td>Salespeople’s performance in this business unit is measured by the strength of relationships they build with customers.</td>
</tr>
<tr>
<td></td>
<td>Salespeople’s performance in this business unit is measured by the strength of relationships they build with customers.</td>
<td>Salespeople’s monetary compensation is almost entirely based on their sales volume.</td>
</tr>
</tbody>
</table>
Employee Innovative Behavior
Generating new ideas for difficult issues (idea generation)
Searching out new working methods, techniques, or instruments (idea generation)
Generating original solutions for problems (idea generation)
Mobilizing support for innovative ideas (idea promotion)
Acquiring approval for innovative ideas (idea promotion)
Making important organizational members enthusiastic about innovative ideas (idea promotion)
Transforming innovative ideas into useful applications (idea realization)
Introducing innovative ideas into the work environment in a systematic way (idea realization)
Evaluating the utility of innovative ideas (idea realization)
of each construct was larger than the correlation of that construct with each of the other latent constructs (see Table 2). The discriminant tests also showed that the underlying MO constructs had high correlations, but this is intuitive and pertains to one overall theoretical construct.

The reliability of scales was also high, considering that the scales’ construct reliabilities (CR) were above .60 (Bagozzi and Yi 1988) and the Cronbach’s alphas were all above .70 (Nunally 1970).

**Explanatory Variables**

*Individual-level MO.* We assessed this construct using Schlosser and McNaughton’s (2007) 20-Item Individual Market Orientation Scale (I-MARKOR), which originated from Kohli and Jaworski’s earliest version of MARKOR. In our sample, frontline employees working in both retail and service businesses completed our survey. The retest of the MARKOR construct (Harris 2001; Baker and Sinkula 1999) indicated that MO is a three-factor, second-order construct.⁵ We performed two sets of analyses. First, we took individual MO as a one-factor construct in the model testing. We did this because a significant part of literature uses the one-factor approach to MO, so we formulated our hypotheses accordingly. Second, because our factor analyses showed that the three-factor solution had the best fit, we also tested our hypotheses for each MO factor separately to compare the results of the two modeling approaches.

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⁵ The second-order reflective construct based on the three first-order MOB constructs has the following indices and standard loadings: MOg = 0.91, MOs = 0.92, and MOr = 0.62. The model fit is similar (CFI = 0.89, TLI = 0.88; RMSEA = 0.058) to the model with three separate component.
Dependent Variable: Employee Innovative Behavior

We used an individual employee innovation performance measure developed by Janssen (2004). Front-line employees completed this measure. The multi-item scale included statements such as “I created new ideas for difficult issues” for idea creation, “I mobilized support for innovative ideas” for idea promotion, and “I transformed innovative ideas into useful applications” for idea implementation.

Because both MO and Innovation had highly correlated items, which converged with their respective constructs, we used a single, unweighted composite score for each of the constructs (Baker and Sinkula 1999; Harris 2001; Kirca et al. 2005).

Moderating Variables: Network Centralities

We measured centrality so that it would account for both the inward and outward flow of interaction for a specific employee. In this study, we defined network centrality as individual one step in degree centrality (Brass 2004), which indicates only direct relationships with other employees within the network and not indirect ones. For each of the 60 firms, with a mean size of 20 employees for each network (SD = 12.25), we collected network data using Marsden’s name generator method (1990), providing our survey participants with a list of identified firm members. To acquire matrix data for advice networks, we asked respondents, “Generally who do you ask for advice when you have a work-related problem?” This question was aimed at mapping out the participants’ workplace link for consumer- and market-related information on a daily basis. For friendship networks, we asked respondents, “In the workplace, with whom do you usually have lunch and chat?”
Using the name lists provided by HR in those firms, we designed questions regarding both advice and friendship networks. We asked employees of each firm to check the list of names of coworkers they consider to be in their advice or friendship networks. By piecing together the data, we obtained two sets of 60 square matrices (directional network data set) for advice and friendship networks, respectively. We computed degree centrality according to Wasserman and Faust’s (1994) method as the ratio of the number of relationships an employee has to the maximum possible relationships in that person’s network (Ibarra 1993; Sparrowe et al. 2001).

**Control Variables**

We administered the six-item market-based reward system by Kohli and Jaworski (1993) to HR employees and top managers. Scores of the scale indicate the degree to which firms make use of the reward system to stimulate MO behaviors. In addition, each firm’s HR respondents provided data on gender and employees’ tenure (i.e., how long they have worked for the firm). See Table 2 for all the measures we have described.
### TABLE 2: Correlations

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</tbody>
</table>

**Correlation is significant at the .01 level (2-tailed).**

*Correlation is significant at the .05 level (2-tailed).*

1. Gender—female = 1, male = 0.
2. Diagonally presented are the square root of AVE.
RESULTS

Multilevel Model Estimation

Table 2 provides the pairwise correlations of the variables. Because our data set is composed of both individual- and firm-level data, we used multilevel modeling to predict variances of dependent variables with maximum likelihood estimations. We assessed within-group agreement ($r_{wg}$), intraclass correlation ($ICC_1$), and reliability of the group mean ($ICC_2$) for these constructs. The null model regression showed that values of ICC for MO components as independent variables are .13, which fits well with recommendations in literature because values above .1 indicate validity of the Multilevel modeling (Schneider et al. 1998). We used a random intercept to capture the between-firm variance.

Table 3a contains the results of MO as one factor, and Table 3b contains the results of the analyses for the three components of MO separately. Both tables show a stepwise approach from Model 1 to Model 2. Model 1 includes MO behavior at an individual level (IMOB) and the three control variables. Then, in Model 2 we entered the interaction terms of advice- and friendship-network centrality with the MO construct. Furthermore, to test the moderation effects on the link of IMOB to Innovation, we transformed the variables into a z-score and then estimated the interaction terms of the standardized values of network centralities and IMOB. This standardization of interaction terms allowed us to directly interpret them in relationship to the means of the interacted variable, while reducing multicollinearity (Cohen and Cohen, 1983, p. 325).
As we predicted in Hypothesis 1 and show in Model 1, we found that IMOB positively affects employee innovative behavior (\( \beta = .38, p < .001 \)). To test Hypothesis 2a and 2b, Model 2 adds the first-order interaction terms of advice and friendship-network centrality with IMOB. The interaction term of advice-network centrality is significant (\( \beta = .29, p < .001 \)), whereas that of friendship-network centrality is not (\( \beta = .01, p > .10 \)). Therefore, we find support for Hypothesis 2a but reject Hypothesis 2b.

To facilitate interpretation, we plotted the moderating effect of advice-network centrality on the relationship between MO and Innovative behavior for high and low advice-network centrality (see Figure 2). As Figure 2 shows, with higher advice-network centrality, employees achieve a higher level of innovation given the same effort in MO behavior adoption.

**Three-Factor MO Model**

We also tested the hypotheses using the three-factor model of MO and found that the moderating effects of advice-network and friendship-network centralities are both significant to MO response to innovation: for advice-network centrality and MO response (\( \beta = .11, p < .01 \)), and for friendship-network centrality and MO response (\( \beta = -.14, p < .01 \)). Advice-network centrality, therefore, mainly strengthens the impact of the MO response dimension, whereas friendship-network centrality has a negative effect on this relationship. Overall, the other moderation tests provide similar insignificant results (cf. each factor separately entering the model, with moderation by both network centralities, see Table 3b). This finding corresponds to what we obtained in the one-factor MO estimation, with the exception of the negative impact
of friendship-network centrality. Advice-network centrality also appears to have a
direct effect on innovative behavior consistently ($\beta = .07$ in the full-factor model or
$\beta = .08$ in separate factor models, $p < .01$) (see Table 3a).

Regarding the control variables, in Models 1 and 2, the MO-based reward has
a consistent positive effect, which shows that it provides an important firm-level
organizational instrument that encourages higher-level individual innovation. The
negative relationship of gender to innovation indicates that male employees are more
inclined to behave innovatively. Tenure, in contrast, does not significantly influence
innovation. We also assessed its potential moderating effects (detailed results can be
presented on request) but found its moderating influence to be non-significant, which
is contrary to assumptions in previous literature (Ibarra 1995).

**Validation of Model**

First, we calculated individual-level and firm-level variances as explained by
individual-level and firm-level predictors. We used a pseudo $R^2$ statistic to measure an
approximation of the increase in the variance of each specific model by using the
variance of the residuals of the parameters (Hox 2002). As shown in Table 3, from
Model 1 to Model 2 there is an obvious increase of firm-level $R^2$, meaning there is a
better fit in the multilevel model. We also ran bootstrapping, the results of which
showed the significance of the predicted moderating effects of the network
centralities.
### TABLE 3a: One-Factor MO Model Estimation with Employee Innovative Behavior as Dependent Variable

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Dependent Variable: Employee Innovative Behavior</th>
<th>Model 1</th>
<th>Model 2</th>
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<td>Employee level</td>
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<td>H1: Supported</td>
<td>Intercept</td>
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<td></td>
<td>MO</td>
<td>.38***</td>
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<td></td>
<td>Advice centrality</td>
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<td></td>
<td>Friendship centrality</td>
<td>-.01</td>
<td>.05</td>
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<td>Moderating network effects</td>
<td>MO*Advice centrality</td>
<td>.29***</td>
<td>.08</td>
</tr>
<tr>
<td>H2a: Supported</td>
<td>MO*Friendship centrality</td>
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<td>.07</td>
</tr>
<tr>
<td>H2b: Not supported</td>
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<tr>
<td>Control: individual level</td>
<td>Gender*</td>
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<td></td>
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<td>Control: firm level</td>
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<td>.06</td>
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<td>R² individual level</td>
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<td>R²Sobel-out*</td>
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*Male = 0, Female = 1
†Proportion of within-firm variances explained by individual-level predictors
*Proportion of between-firm variances explained by firm-level predictors
Strict form of multiplex network centrality measure
***Significant at the .005 level (2-tailed)
**Significant at the .01 level (2-tailed)
*Significant at the .05 level (2-tailed)
†Significant at the .10 level (2-tailed)
# TABLE 3b: Three-Factor Model Estimation with Employee Innovative Behavior as Dependent Variable

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<th>Parameter</th>
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<th>Beta</th>
<th>S.E.</th>
<th>Beta</th>
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<th>Beta</th>
<th>S.E.</th>
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<td>-.04</td>
<td>.06</td>
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<td>.06</td>
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<td>.05</td>
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<tr>
<td>Advice centrality*IM0r</td>
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<td>Friendship centrality*IMOs</td>
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<td>Friendship centrality*IM0r</td>
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male = 0, female = 1
market orientation behavior as three-factor construct at individual level
**Significant at the .005 level (2-tailed)
*Significant at the .01 level (2-tailed)
Significant at the .05 level (2-tailed)
FIGURE 2: Advice-Network Centrality Moderating Effect on MO to Innovative Behavior Link
DISCUSSION

Although innovative behavior is one of the central desirable outcomes for MO (Kirca et al. 2005; Han et al. 1998), the issue of how individual MO behaviors lead to innovations is still under-researched. This study is one of the first to shed light on this issue with a network embeddedness perspective by investigating the role of intrafirm network influences on the MO-to-innovative-behavior link. This study enhances our understanding of this link by showing that being deeply embedded in an advice network increases the strength of the link, whereas being deeply embedded in a friendship network does not. Supported by multi-level modeling on a multi-source, multi-informant data set, this study is among the first efforts to empirically test assumptions that the extent of innovative MO outcomes strongly relies on person-to-person interaction within firms (Lam et al. 2010; Kohli and Jaworski 1990).

The central theoretical issue this study attempts to present is the significant role of Network embeddedness in transforming MO into innovation. The results of this study show that individual employees can increase their effective transformation of MO behavior into innovation by leveraging their advice-network centrality. Centrality in advice networks enhances the effectiveness of MO activities because there are more frequent updates to the continuously changing customer needs (Slater and Narver 1995). Furthermore, with high centrality in advice networks, an employee can obtain diverse flows of information, which leads to realistic customer profiles. Finally, because colleagues are more likely to support the innovative initiatives of employees with higher centrality in the “socio-political process” (Van de Ven 1986), it might be easier for these innovators to gather resources.
Similar to previous findings, this study finds that informal networks matter in explaining workers’ innovative outcomes (Ibarra 1994). This study also reveals that for individual employees’ network embeddedness, the type of informal networks also matters for MO to have an innovative effect. A distinctive finding presented in this study is that advice network centralities significantly strengthen the link between MO and Innovation, whereas friendship-network centralities do not. This finding not only goes against intuition, but it also contradicts some research evidence in previous literature that suggests that high friendship-network centrality may yield better performance outcomes (Klein et al. 2004). According to previous research, employees high in friendship-network centrality tend to conform more to the behaviors of others with whom they maintain a friendly relationship, possibly preferring less change to gain popularity or homophily (conforming to the whole group’s behavior) (Brass 2004; Ibarra 1993). As a consequence, friendship centrality may encourage innovation only when MO is executed at a high level and innovation is upheld by the majority of the organization’s members.

Managerial Implications
This study offers some managerial implications. First, it is important to encourage sharing of information through relational networks among colleagues. Therefore, employees with high advice-network centrality should be more carefully observed because they may generate more innovative outcomes than those who have low advice-network centrality. When such employees are identified, managers may encourage their efforts by empowering them with more resources. Because centrality seems difficult to manage, managers can help increase individual employees’ network centrality by
encouraging more social interactions. Moreover, we suggest that managers pay attention not only to management efforts and employees’ HR attributes, such as work experiences, but also to the manner in which they interact with each other. They should spend time and effort on monitoring employees’ intrafirm networking activities. The aim is to help employees become more innovative through acquiring more advantageous social network positions.

Limitations and Further Study

This study has several limitations. First, though the data we used gave us an advantage in network perspective, owing to the small natural size of the firms being small enough for network predicting with the least possible bias, it is necessary to assess whether in large firms advice-network embeddedness will also serve as an important moderator of innovative behavior. Second, though this study analyzes the network centrality of employees’ friendships and advice relationships, it is not clear whether their network positions are a consequence of their previous MO activities. Third, we are not sure whether MO reward systems cause employees to attempt to generate network ties for MO information access. Fourth, we do not know whether it is possible to manipulate network positions externally. Fifth, recent studies have shown that employees’ innovative behavior has a lot to do with social incentives (Sauermann and Cohn 2010), which may or may not be opposed to economic or pecuniary incentive perspectives for innovative behavior (Sauermann and Cohn 2010; Arrow 1962). Sixth, research has shown that individual social incentives can be broad enough to link with many social activities, one of which could be closely related to this study: pleasure in sharing knowledge or expertise as an important achievement (Sauermann and Cohn 2010).
Further investigation is necessary to show the latent links among network position, social incentives, and other pecuniary or non-pecuniary motives behind individual innovative behavior.
CHAPTER 5: REALIZING MINDFUL MARKETING BY USING INTRAFIRM NETWORKS

An Exploratory Study\(^6\)

\(^6\) Presented at AMA 2013 Annual Conference, Boston, August, 2013. Here I would acknowledge thanks to the Special Interest Group of Entrepreneurial Marketing Session at the conference for comments and insights concerning this paper. It was reviewed and resubmitted to a special issue of *Journal of Research in Marketing and Entrepreneurship*. 
ABSTRACT

The purpose of this study is to propose an empirical linkage between intrafirm network characteristics and individual-level mindful marketing. Based on current literature on network, market orientation, and mindful marketing research, this study presents a conceptual model to capture enablers of mindful marketing with a network approach. A pair of antecedents/barriers to mindful marketing execution are individual employees’ shared cross-functional ties and firm-level segmentation of a network. This article shows that to execute mindful marketing, employees possessing more cross-functional ties are more likely to achieve a higher level of mindful marketing. In addition, firm-level segmentation of an intrafirm network negatively affects employees who are executing mindful marketing. The proposed empirical linkage shows that managers should encourage employees to build cross-functional ties with each other.
INTRODUCTION

To respond to the ever-increasing call for sustainability of business goals, Sheth and his colleagues (2011) have advanced a new concept in current marketing theory called “mindful consumption,” which encourages a fine-tuned balance between business benefits and customers’ needs. Mindful consumption emphasizes a constant consciousness of and proactive response to three main issues: the environmental, economic, and societal interests of the firm. Based on this concept, its creators proposed a theoretical framework for a marketing strategy: mindful marketing (Sheth et al. 2011). According to this theory, the firm should keep itself constantly mindful of these aforementioned three issues to avoid both wasteful and dissatisfied consumption and to maintain business success in the long run. Mindful marketing theory attempts to make marketing orientation theory more sophisticated by stressing efforts to attend to customers’ specific, individual needs and paying attention to firms’ stakeholder interests, including concerns about environmental or societal damage resulting from overconsumption caused by over-marketing.

The practice of mindful marketing is endorsed by a broad view of on-going market scenarios, differentiated information about customers’ needs, and consistent readiness to adapt to or innovate for changes in the market in general or in customers’ special needs (Ndubisi 2012; Weick, Sutcliffe and Obstfeld 1999; Leary et al. 2006). To achieve these goals, mindful marketing requires a concerted effort from all employees (Malhotra, Lee, and Uslay 2012; Ndubisi 2012), who must strive to be open to new business scenarios, be sensitive to distinctions in various contexts, be receptive to multiple opinions, and possess a good sense of their own positions in various
situations (Ndubisi 2012; Sternberg 2000). This portfolio of activities requires individual employees to act with a “greater sense of skill, connection, openness and balance” (Owusu-Frimpong and Nwankwo 2012). In summary, to develop mindful marketing, a firm must depend largely on individual-level contributions (Malhotra, Lee, and Uslay 2012; Ndubisi 2012) through “active information processing” to acquire an uninterrupted stream of data (Langer 1989).

It is crucial to understand what individual employees must do to achieve mindful marketing (Ndubisi 2012). Mostly related to information processes within the firm, the core of this emerging concept is generating and using nuanced information about customers’ needs to create balanced and fine-tuned market offerings (Sheth et al. 2011). The purpose of this study is to find out how and which elements within a firm can affect the development of mindful marketing. For example, managers attempting to promote mindful marketing can reward employees who actively practice the theory. However, employees cannot merely be required to become mindful automatically; rather, they need social interactions with colleagues and customers because most mindful marketing activities are information based. Therefore, promoting awareness of the environment, economy, and society (the three essential elements of mindful marketing) can take place through active social interactions among employees to generate and disseminate information. Furthermore, it is necessary to have interactions guided by this awareness to gain support from colleagues.

A scientific field that studies such interactions is called social network analysis (SNA). In previous research, SNA has consistently shown that employee behaviors tend to be strongly affected by the characteristics of social networks of which these employees are members (Brass et al. 2004). For example, information generation and
dissemination can be segmented or unevenly distributed in firms according to group boundaries. Segmentation of interaction in firms negatively affects mindful marketing, which depends on information from as many perspectives as possible. To minimize this phenomenon, employees may need to have sufficient interactions across different functional groups to remain mindful of events in the market and changes in customers’ needs.

Because mindful marketing is still in the proposition stage, an empirical study of its conceptual model, based on the proposed core activities, will extend our understanding of the theory. In the following sections, we consider the conceptual background of mindful marketing, operationalize key constructs, and examine model elements related to mindful marketing. We discuss our findings and conclude research implications in the last sections.

**BACKGROUND AND HYPOTHESES**

Mindful marketing emphasizes aligning customers’ needs and firms’ interests—a win-win situation in which firms create market offerings that are balanced by steadfastly tracking customers’ needs so there are no negative effects of over-marketing on the environment, society, and customers (Sheth and Uslay 2007). Mindful marketing activities are mostly based on acquiring information about environmental settings, market incidences, and customers’ needs. This information is constantly updated through interactions with employees’ intrafirm networks. Because these activities are inherently in line with the marketing concept of market orientation (MO) (Narver and
Slater 1990; Kohli and Jaworski 1990), scholars have proposed a possible conceptual link between MO and mindful marketing (Malhotra, Lee, and Usay 2012). Both relate to a common ground for firms’ strategic orientation: business based on prior knowledge of customers’ needs and market situations. Such prior knowledge is generated and disseminated throughout the firm by employee-level, active social interactions.

**Mindful Marketing and Intrafirm Networks**

Firms are made up of social connections that emerge naturally from employees’ efforts to interact with each other. Social interactions among employees thus create conduits for information flow throughout the organization (Lam et al. 2009; Brass 2004; Kohli and Jaworski 1990). This flow of information mainly comes out of employees’ interactions with customers about their needs for products or services. The information exists in employees’ minds and flows from one to another (Hitt et al. 2000). To assess the roles of such interactions, this study relies on two distinctive elements of the intrafirm advice network: where employees look for and gain market information and how they react to it.

Networks within firms enable information from individual employees to flow beyond the constraints of formal organizational structures, such as departmental functions. These functions constitute the hierarchical structure of firms, and, according to previous studies on the development of MO (Harris 2001; Kohli and Jaworski 1990), significantly affect managers’ efforts to enhance performance. In this sense, mindful marketing and MO activities share the same conceptual core of customer-value and market-information processes (Ndubisi 2012).
Recent research has proposed a positive theoretical link between MO and mindful marketing (Maholtra et al. 2012). Based on this link, this study focuses on related dimensions of mindful marketing activities, such as generation of, dissemination of, and reaction to information supported by intrafirm social networks. Intrafirm network interactions can be diverse. In this study, we account for two network characteristics, which in previous research were found to be significant in information dissemination and business performance. These characteristics are segmentation and formation of cross-functional ties.

Segmentation

Employees within a firm tend to choose a group of colleagues with whom to interact based on common backgrounds or other factors and thus form a group or clique (Baerveldt and Snijders 1994). This subgroup belongs to a “pre-existing” classification (Baerveldt and Snijders 1994). In this research context, the classification takes place in terms of functional divisions among the employees in terms of their advice networks. Segmentation of the interaction network induces information flow to comply with functional boundaries within the formal organizational system. In such a case, it is possible to (intentionally or unintentionally) block information about the market or customers and keep it within different functions of the firm. This hinders employees from developing mindful marketing behavior because it tends to block information flow and create a situation in which information needed for the firm as a whole stays in one pocket of the organizational system or is available only to a limited few for possibly selfish or opportunistic exploitation. Individual employees who are developing mindful marketing must open channels throughout the firm to glean information as widely as possible, so as to maintain a sufficient level of awareness of the market situation.
Therefore, this study assumes that segmentation in intrafirm advice networks is detrimental to mindful marketing at the individual level. Thus, we suggest the following hypothesis:

**HYPOTHESIS 1**: Segmentation at the firm level negatively affects mindful marketing among individual employees.

**Cross-Functional Ties**

Another network characteristic occurs when employees, unaffected by the firm’s functional boundaries, form cross-functional ties. Employees can thus obtain information across formal organizational boundaries that define functional departments within firms and acquire wide access to market and customer information and become better prepared to react to these effectively. Employees become more knowledgeable about customer needs through such networks. Firms that embrace mindful marketing may benefit from these interaction ties. For example, when employees who have contact with customers on a daily basis interact with employees who work in the office and do most of the planning, information from such interactions keeps employees in different departments aware of customer needs and helps them plan ahead.

Using mindful marketing, employees are better able to position themselves with uninterrupted information flow in spite of functional barriers, so they are aware of both firm and customer interests (Ndubisi 2012; Sheth and Sisodia 2006; Langer 1989). Information through such cross-functional ties may introduce new information categories and help distinguish new contexts of customer needs so that firms can anticipate market changes (Weick and Sutcliffe 2007).
Thus, we posit the following hypothesis:

**HYPOTHESIS 2:** Cross-functional ties facilitate mindful marketing development at the individual level.

**Interaction between Managerial/Organizational Enablers and Intrafirm Networks**

To encourage employees to more proactively generate and disseminate information, managers can apply managerial instruments. First, top-management commitment is crucial to enforcing a strategic orientation throughout the firm (Kirca *et al.* 2005) by sending an unmistakable signal to individual employees about what they must do. In addition, some effects can be achieved through applying a reward system that encourages mindful marketing activities, such as actively generating and using information about customers and market situations (Kohli and Jaworski 1990) and engaging in employee recruiting and training for such activities (Ruekert 1992).

Organizational attributes such as centralization and formalization can directly help or disturb information-related activities within firms (Harris 2001; Kohli and Jaworski 1990) and thus affect development of mindful marketing. Firms with a centralized organizational structure tend to delegate decision-making authority throughout firms and limit employee participation in the decision-making process. This practice can hinder mindful marketing, which bases information generation and dissemination activities on flexible organizational structures and requires immediate responsiveness (Malhotra *et al.* 2012). It also hinders entrusted decision making by individual employees who have expertise based on information they have gathered. Thus, firms with centralized organizational structures can reduce mindful marketing
activities. These activities may clarify different work scenarios by formalizing organizational procedures such as rules and norms. This practice may help employees enhance their ability to acquire “nuanced insight” (Weick and Sutcliffe 2006). Clarity of rules and norms may also increase the possibility of rapid responses to potentially diverse incidences from markets and customers (Weick and Sutcliffe 2006; Ndubisi 2012).

By taking into account the effects of the previously mentioned managerial instruments and organizational attributes, we can have a more comprehensive view of employees who are developing mindful marketing in real corporate settings. First, as already mentioned, segmentation naturally weakens information flow by constraining the network between different functional groups. Therefore, segmentation can reduce the positive effects of managerial instruments such as top-management commitment and reward systems that encourage mindfulness in information generation and dissemination. In contrast, segmentation can increase the negative effects of centralization that result from a diminished information flow by adding group boundaries to information flow as well as further delaying decision making. Similarly, a segmented information flow in a formalized firm may also provide less of a chance for mindfulness in information generation and dissemination.

On the one hand, cross-functional ties can strengthen information flow and utilization and which may also mitigate possible restricting effects of the formal organizational system. Furthermore, managerial instruments such as top-management commitment and reward systems may have a positive influence on mindful marketing execution by increasing shared cross-functional ties. On the other hand, these ties might
reduce the negative effect of centralization and formalization caused by enhanced information flow and utilization. In summary, we posit the following:

HYPOTHESIS 3: Segmentation reduces the positive effects of management commitment and reward systems on mindful marketing; furthermore, it increases the negative influence of centralization and formalization on mindful marketing.

HYPOTHESIS 4: Cross-functional ties enhance the effect of the positive link between top-management commitment and reward systems on mindful marketing; meanwhile, cross-functional ties also reduce the negative influence of centralization and formalization on mindful marketing.

METHODOLOGY

Data Collection

We adopted a multi-source multi-informant approach by using a conventional survey instrument in order to reduce common method variance (Zhou et al. 2002; Van Bruggen et al. 2002). For example, we gathered information on particular scales by putting the same question to both front-line managers and front-line employees. With informants distributed in these two groups across different firms, we cross-validated the survey results to ensure high consistency and validity. The convergence test showed no significant mean differences between the two groups’ answers to the same statement for each item. We translated the English survey questions into Mandarin and then back
translated, with a check by business professionals who speak both Mandarin and English.

We randomly selected firms from a large MBA club in China, the archive of which provided us a rich source of business contacts in the country. These MBA contacts helped us locate firms that were in most cases their employers. The businesses all operated in the service industry, with a strong focus on retail and trade businesses (about 30%). We collected a net sample of 60 firms after approaching 224 service firms for data (response rate: 26.8%). The firms of interest were mostly small firms with only 20 to 30 employees (only 8% of the 60 firms had fewer than 20 employees or more than 50 employees), making the sample more suitable for complete network measurement (Sparrowe 2001). Because the network data are key predictors in this research, a response rate of more than 80% for each participating firm was necessary to ensure data validity (Wasserman and Faust 1994; Sparrowe et al. 2001). The 60 firms provided data about intrafirm networks involving 1175 employees, all in clearly defined network matrices. For non-network constructs, we asked the responding firms to offer an entire roster of employees to answer the survey questions. Respondents within the firms were organized into five different functional groups: top management, HR managers, frontline managers, support staff, and frontline employees. Senior-level managers or HR managers were asked about market-orientation-based reward systems. HR managers were also specifically approached for organizational data about the firms (e.g., “length of employee service of individuals” for tenure).
Measures
We used established measures for both network and non-network data. Table 1 provides the validity and reliability of the constructs, as well as the items for all constructs used in the model.

Dependent Variable: Mindful Marketing
Because mindful marketing is closely related to MO (Malhotra et al. 2012), and in this study we also describe the dimensions of information generation, dissemination, and responsiveness of the proposed mindful marketing construct, we operationalize the construct by adopting Schlosser and McNaughton’s 20-Item Individual MO Scale (2007). This construct originated from Kohli and Jaworski’s earliest version of MARKOR. In our sample, frontline employees working in both retail and service businesses completed the survey. A retest of the MARKOR construct (Harris 2001; Baker and Sinkula 1999) indicates that MO is a three-factor, second-order construct.¹

We performed two sets of analyses. First, we designated individual MO as a one-factor construct in the model test. A significant share of literature uses the one-factor approach to MO, so we formulated our hypotheses accordingly. Second, because our factor analyses show that the three-factor solution has the best fit, we also tested our hypotheses for each MO factor separately so we could compare the results of the two modeling approaches (a separate model was run and reported in Table 3b). The scale reliability α was .896 for the 20 items comprising the entire individual market orientation scale (.941 in Schlosser and McNaughton’s study [2009]). Mindful

¹ The second-order reflective construct based on the three first-order MO behavior constructs has the following indices and standard loadings: MO information generating = 0.91, MO information sharing = 0.92, and MO information responding = 0.62. The model fit is similar (CFI = 0.89, TLI = 0.88; RMSEA = 0.058) to the model with three separate components.
### TABLE 1: Measurement Items and Validity Analysis

<table>
<thead>
<tr>
<th>Scale Items</th>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mindful Marketing (adopted from Schloss &amp; McNaughton’s IMARKOR (2009), construct reliability: α=.94, AVE=.45)</strong></td>
<td></td>
</tr>
<tr>
<td>Information Generating Behavior (AVE=.44)</td>
<td></td>
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<tr>
<td>I ask people who used our product or service to assess the quality.</td>
<td>.629</td>
</tr>
<tr>
<td>I interact with people either directly from customers or agencies (distributors) to know what product or services customers will need in the future.</td>
<td>.692</td>
</tr>
<tr>
<td>In my communications with these people, I periodically review the likely effect of changes in our business environment (e.g. company mergers and acquisitions) on customers.</td>
<td>.695</td>
</tr>
<tr>
<td>I take responsibility to detect fundamental shifts in our business (e.g. competition, technology, regulation) in my communication with distributors.</td>
<td>.688</td>
</tr>
<tr>
<td>I talk to or survey those who can influence our customers’ purchases (distributors).</td>
<td>.702</td>
</tr>
<tr>
<td>I review our product development efforts with distributors to ensure that they are in line with what customers want.</td>
<td>.707</td>
</tr>
<tr>
<td>I participate in informal “hall talk” that concerns our competitors tactics or strategies.</td>
<td>.543</td>
</tr>
<tr>
<td>I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)</td>
<td>.526</td>
</tr>
<tr>
<td><strong>Information Sharing (AVE = .44)</strong></td>
<td></td>
</tr>
<tr>
<td>I participate in interdepartmental meetings to discuss market trends and developments.</td>
<td>.595</td>
</tr>
<tr>
<td>I let appropriate departments know when I find out that something important has happened to a major distributor, market or customers base.</td>
<td>.633</td>
</tr>
<tr>
<td>I coordinate my activities with the activities of coworkers or departments in this organization.</td>
<td>.550</td>
</tr>
<tr>
<td>I pass on information that could help company decision-makers to review changes taking place in our business environment.</td>
<td>.652</td>
</tr>
<tr>
<td>I communicate market developments to departments other than marketing.</td>
<td>.722</td>
</tr>
<tr>
<td>I communicate with our marketing department concerning market development.</td>
<td>.733</td>
</tr>
<tr>
<td>I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on my distributor contacts and their customers to appropriate departments.</td>
<td>.605</td>
</tr>
<tr>
<td>If customer has a problem with our product or service, I try to find something or the person to solve the problem.</td>
<td>.686</td>
</tr>
<tr>
<td>I try to help customers/distributors achieve their goals.</td>
<td>.625</td>
</tr>
<tr>
<td>I respond quickly if a customer/distributor has any problems with our offerings.</td>
<td>.713</td>
</tr>
<tr>
<td>I take action when I find out that customers are unhappy with the quality of service or product.</td>
<td>.698</td>
</tr>
<tr>
<td>I jointly develop solutions for customers with members of our customer/adviser relationship team.</td>
<td>.562</td>
</tr>
<tr>
<td><strong>Reward System (construct reliability: α=.88, AVE=.40)</strong></td>
<td></td>
</tr>
<tr>
<td>No matter which department they are in, people in this business unit get recognized for being sensitive to competitive moves.</td>
<td>.718</td>
</tr>
<tr>
<td>Customer satisfaction assessments influence senior managers’ pay in this business unit.</td>
<td>.817</td>
</tr>
<tr>
<td>Formal rewards (i.e., pay raise, promotion) are forthcoming to anyone who consistently provides good market intelligence.</td>
<td>.817</td>
</tr>
<tr>
<td>Salespeople's performance in this business unit is measured by the strength of relationships they build with customers.</td>
<td>.748</td>
</tr>
<tr>
<td>Salespeople's monetary compensation is almost entirely based on their sales volume.</td>
<td>.560</td>
</tr>
<tr>
<td>We use customer polls for evaluating our employees.</td>
<td>.759</td>
</tr>
<tr>
<td><strong>Management Commitment (construct reliability: α=.67, AVE=.41)</strong></td>
<td></td>
</tr>
<tr>
<td>I feel strongly about the importance of market orientation for our company.</td>
<td>.478</td>
</tr>
<tr>
<td>I enjoy talking about our customers and competitors with my colleagues, especially my subordinates.</td>
<td>.733</td>
</tr>
<tr>
<td>I gain a sense of personal accomplishment in providing to or sharing with my colleagues information about our customers or competitors.</td>
<td>.665</td>
</tr>
<tr>
<td>I explain to all of my employees the importance of Market Orientation for our company.</td>
<td>.532</td>
</tr>
<tr>
<td>I often discuss with people outside my company issues related to a Market-Oriented strategy.</td>
<td>.613</td>
</tr>
<tr>
<td>Market Orientation should be the number one priority of my company.</td>
<td>.633</td>
</tr>
<tr>
<td>I am willing to put in a good deal of effort beyond that normally expected, in order to help my company progress with Market Orientation.</td>
<td>.721</td>
</tr>
<tr>
<td>The way I feel about Market Orientation is in line with my colleagues.</td>
<td>.403</td>
</tr>
<tr>
<td>I really care about our company’s Market-Oriented policies.</td>
<td>.754</td>
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</tbody>
</table>
marketing in this study includes generation of, sharing of, and response to market-oriented information (as shown in Table 1). Employees completed the following surveys.

**Main Predictor: Intrafirm Network**

We used two network measures to predict the dependent variable. First, we adapted network segmentation measures from Baerveldt and Snijders’ study (1994). They measured fractions of interacting pairs in a given network, whose social distance between them in a certain network at a certain short length. In this study, social distance is defined as no larger than three paths (pairs connected by a maximum of two other people). If $F_r$ is the fraction of pairs at a social distance of $r$ paths, whereas $D_r$ is the number of all interacting pairs in the network and $N =$ number of actors in the network, then

$$F_r = 2D_r / [N(N-1)].$$

In this study, the network refers to the employees’ advice network.

Another network measure used in this study indicates the ratio of cross-functional ties in the advice network. We took this construct from the E-I index
(Krackhardt and Stern, 1988), which was developed to measure the extent to which a party’s ties form a bridge across some organizational or social divide. In this study, for each of the 1175 respondents in our sample, we considered the distribution of advice network ties within and across different functions (coded as a dummy variable in the data set). Given a relationship among employees in our sample, the E-I index for any actor \( i \) was constructed by considering the difference between the number of external ties and the number of internal ties. It is defined as:

\[
E-I \text{ index} = \frac{E_i - I_i}{E_i + I_i}
\]

where \( E_i \) and \( I_i \) are the number of external and internal ties, respectively, for employee \( i \).

**Managerial and Organizational Variables and Individual Demographics**

We adapted a nine-item scale previously generated for “management commitment to quality” by Hartline and Ferrell, published in *Journal of Marketing* (1993). After we replaced “quality” with “market orientation,” we expected this scale to operationalize top managers’ affective commitment to mindful marketing at the firm level. The skewedness of this measure is slightly negative (~1.24) but still not too large to cause bias and weaken its correlation with other variables.

We used the 6-item reward system construct by Kohli and Jaworski (1990). The questions on this scale were administered to HR managers and top managers. We found the alphas for construct reliability of both to be .897. At the individual level, we included both Gender and Tenure. Both appeared to have a significant effect on employee behavior in the service and sales business (Babin and Boles 1998; Siguaw and Honeycutt 1995).
Measure Validity

We checked construct validity of these at both individual and firm levels by examining their respective dimensionality, criterion-related validity, and discriminant validity (see Table 2). We conducted a principle component factor analysis with “orthogonal rotation” and obtained a one-factor solution for each of the three behavioral components, with average loading at .897 for market information generation, .892 for market information sharing, and .869 for market information response, which explained the .73, .69, and .66 percent variances of the constructs, respectively.

We also found correlations between dependent variables and other individual- and firm-level predictors (see Table 2). We performed a discriminant validity check of the measures used and found that each of the dependent variables had a single-factor structure and were theoretically related. We also found these to be distinct constructs measured by the same or different sources and uncorrelated with theoretically unrelated constructs measured by the same source (Liao and Chuang, 2004).
TABLE 2: Correlations

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<td>1</td>
<td>.488</td>
<td>.493</td>
<td>.590</td>
<td>.166</td>
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</tbody>
</table>

1 All variables are z-score standardizations of the original survey data.
**Correlation is significant at the .01 level (2-tailed).
**Correlation is significant at the .05 level (2-tailed).
RESULTS AND DISCUSSION

Multilevel Model Estimation

Table 2 provides a pairwise correlation of the variables. Because our data set was composed of both individual- and firm-level data, we used multilevel modeling to predict variances of dependent variables with maximum likelihood estimation. The null model regression showed an intraclass correlation of .13, which fits well with recommendations recorded in literature (Schneider et al. 1998); thus, we validated the multilevel modeling approach. We used a random slope to capture the between-firm variance, which we found to be significant with the ICC score.

Table 3a and 3b show the results of the regression analysis. Table 3b presents the regression results when the dependent variable mindful marketing should be taken for three-factor construct of separate behavioral dimensions.

A stepwise approach is realized from Model 1 through Model 3. Model 1 includes mindful marketing development at the individual level as a dependent variable and includes all individual- and firm-level variables. Then, in Model 2, we entered intrafirm network measures: firm-level segmentation and individual-level cross-functional network tie ratio. In Model 3 we entered an interaction term for each of the network measures, with both managerial enablers (MO commitment and reward system) as well as organizational enablers (i.e., centralization and formalization, according to Kohli and Jaworski 1990). Furthermore, to test the moderation effects of the intrafirm network on the link of both organizational and managerial enablers to mindful marketing, we transformed the variables into z-scores and then estimated the interaction terms of standardized values. Using standardized z-scores in interaction
terms allowed for them to be directly interpreted in relationship to the means of the interacted variables, while reducing multicollinearity (Cohen and Cohen, 1983, p. 325).

Table 3b shows slight differences, however, most of the estimates converge in the range and direction of variances.

Direct Effect of Intrafirm Network on Mindful Marketing Execution

We first tested Hypothesis 1, which is the positive effect of the individual cross-functional intrafirm advice network tie ratio of mindful marketing execution. With Model 2, we regressed managerial and organizational instruments at the firm level as well as individual attribute control variables such as business training and gender, on mindful marketing execution. The coefficient for cross-functional intrafirm network tie ratio indicates statistically its significant relationship with mindful marketing execution ($\beta = .10, p < .01$). The positive impact of cross-functional network tie on mindful marketing execution is consistent also in Model 3 ($\beta = .11, p < .01$). Therefore, Hypothesis 1 is supported.

To test hypothesis 2, we also added firm-level segmentation in Model 2, which had a significant ($\beta = -.11, p < .01$) negative effect on mindful marketing execution. The network construct showed a consistent, significant direct effect on mindful marketing execution in Model 3 ($\beta = -.10, p < .01$). Therefore, Hypothesis 2 is supported.
\textbf{TABLE 3a: Intrafirm Network and Mindful Marketing Execution}^2

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>SE</td>
<td>Beta</td>
<td>Beta</td>
</tr>
<tr>
<td><strong>Individual level</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Intercept</td>
<td>.11</td>
<td>.06</td>
<td>.09</td>
<td>.06</td>
</tr>
<tr>
<td>Gender</td>
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<tr>
<td>Business training</td>
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<td>.03</td>
<td>.04</td>
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<tr>
<td>Cross-functional ties</td>
<td>.10**</td>
<td>.04</td>
<td>.11***</td>
<td>.04</td>
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<tr>
<td><strong>Firm level</strong></td>
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<td>Management commitment</td>
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<td>.05</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>Reward system</td>
<td>.13**</td>
<td>.05</td>
<td>.12**</td>
<td>.04</td>
</tr>
<tr>
<td>Centralization</td>
<td>.03</td>
<td>.05</td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td>Formalization</td>
<td>.08^</td>
<td>.05</td>
<td>.09†</td>
<td>.05</td>
</tr>
<tr>
<td>Segmentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.11**</td>
<td>.04</td>
<td>-.10**</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Cross level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interaction between
segmentation and....
| Management commitment       | -.03    | .10     | H3 partially |
| Reward system               | -.06    | .08     | supported    |
| Centralization              | -.10**  | .05     |             |
| Formalization               | -.07    | .06     |             |

Interaction between cross-
functional ties and....
| Management commitment       | .01     | .10     | H4 not supported |
| Reward system               | -.11**  | .042    |             |
| Centralization              | -.01    | .036    |             |
| Formalization               | -.01    | .042    |             |

\textit{Model Fit}
\begin{itemize}
  \item $R^2$
  \item $\Delta R^2$
  \item $\Delta \chi^2$
\end{itemize}

\begin{tabular}{lrrr}
\hline
 & Model 1 & Model 2 & Model 3 \\
$R^2$ & .15 & .263 & .37 \\
$\Delta R^2$ & .10 & .059 & .11 \\
$\Delta \chi^2$ & 2.74* & 3.48* & 3.27* \\
\hline
\end{tabular}

\textsuperscript{1}Dependent Variable: individual mindful marketing execution (IMM)
\textsuperscript{2}This parameter is set to zero because it is redundant.
\textsuperscript{**Significant at the .01 level (2-tailed)}
\textsuperscript{*Significant at the .05 level (2-tailed)}
\textsuperscript{†Significant at the .10 level (2-tailed)}
### TABLE 3b: Three-Factor Mindful Marketing Construct Model Estimation

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Information generating</th>
<th>Information sharing</th>
<th>Information responding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>SE</td>
<td>Beta</td>
</tr>
<tr>
<td><strong>Individual level</strong></td>
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<td></td>
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<tr>
<td>Intercept</td>
<td>.14</td>
<td>.08</td>
<td>.04</td>
</tr>
<tr>
<td>Business training</td>
<td>-.02</td>
<td>.03</td>
<td>-.01</td>
</tr>
<tr>
<td>Gender</td>
<td>-.25</td>
<td>.15</td>
<td>-.05</td>
</tr>
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<td>Cross-functional ties</td>
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<td><strong>Firm level</strong></td>
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<tr>
<td>Management commitment</td>
<td>-.47</td>
<td>.42</td>
<td>.07</td>
</tr>
<tr>
<td>Reward system</td>
<td>.16</td>
<td>.16</td>
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</tr>
<tr>
<td><strong>Cross level</strong></td>
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</tr>
<tr>
<td>Interaction between segmentation and...</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Management commitment</td>
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<td>-.03</td>
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<tr>
<td>Reward system</td>
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<td>Interaction between cross-functional ties and...</td>
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<tr>
<td>Management commitment</td>
<td>-.05</td>
<td>.07</td>
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</tr>
<tr>
<td>Reward system</td>
<td>-.003</td>
<td>.03</td>
<td>-.06*</td>
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<tr>
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<td>.03</td>
<td>-.02</td>
</tr>
<tr>
<td><strong>Model Fit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.12</td>
<td>.36</td>
<td>.34</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.10</td>
<td>.05</td>
<td>.11</td>
</tr>
<tr>
<td>Δχ²</td>
<td>2.42*</td>
<td>3.40*</td>
<td>3.66*</td>
</tr>
</tbody>
</table>

*Dependent Variable, as mindful marketing uses three market orientation behavioral factors.  
***Significant at the .005 level (2-tailed)  
**Significant at the .01 level (2-tailed)  
*Significant at the .05 level (2-tailed)  
Significant at the .10 level (2-tailed)
Indirect Effects of Intrafirm Network on Mindful Marketing Execution

For Model 3, we added interaction terms of the two network constructs with both sets of managerial and organizational instruments. The result shows that when we take firm level segmentation for moderators of the effect of firm-level managerial instruments, it reduces actually the original negative relationship between centralization and mindful marketing (β = −.10, p < .05), with all others yielding non-significant relationships. Though firm-level segmentation seems also to reduce the original negative relationship between formalization and mindful marketing, the moderating effect is not significant (β = −.10, p < .10).

Cross-functional ties displayed a strong moderating effect on the relationship between reward and mindful marketing behavior, whereas others remain insignificant. The coefficient is β = −.11, p < .01. Thus, the model estimation only partially supports Hypothesis 3 and does not support Hypothesis 4.

Model Fit

First we calculated individual-level and firm-level variances, as explained by individual-level and firm-level predictors: We used a pseudo R² statistic to measure an approximation of the increase in the variance explained for each specific model by using the variance of the residuals of the parameters (Hox 2002).

As Table 3a shows, from Model 1 through Model 3, there is an obvious increase of firm-level R², indicating a better fit in the multilevel model (for Model 2, ΔR² = .06, Δχ² = 3.48, p < .05; for model 3, ΔR² = .11, Δχ² = 3.27, p < .05).
DISCUSSION

We interpret the results in the following way. The two network measures—Cross-functional network tie and Network segmentation—both reveal the dissemination process of market information. We added the direct influences of intrafirm network as mindful marketing execution instruments in Hypothesis 1 and Hypothesis 2, which were both supported by model estimation.

The interaction between network constructs and managerial and organizational instruments is worthy of special attention. According to previous research, the centralization of organizational systems tends to put too much constraint on information dissemination (Deshpandé and Zaltman 1982). Thus, segmenting the intrafirm advice network may theoretically strengthen this tendency because information flow will follow group boundaries within the network. The result of the model estimation shows that segmentation increases the negative effect of centralization, which gives us insight. Given the constraints of organizational structure information flow at the same level through functional boundaries, network segmentation can exacerbate the situation.

Another interesting finding is that cross-functional ties can decrease MO reward system influence on mindful marketing execution, which is counterintuitive. In this situation, a reward system is found to directly exert a strong positive influence on individual-level mindful marketing execution in Model 1 through Model 3, which is consistent with prior research. Possible explanations are, first, strong cross-functional ties may lead to stronger subgroup solidarity among employees and thus weaken or even disable influences from firm-level managerial instruments. Second,
employees who have a higher ratio of cross-functional ties in their intrafirm networks may also have more influence on or power with colleagues. It is logical to assume that this influence may decrease the positive effects of managerial instruments—especially obvious and strong ones such as a reward system.

Conclusions, Implications, and Future Directions

This study deals with two issues in current mindful marketing literature. First, mindful marketing execution takes place at the individual-employee level, which is important for practicing the theory. Second, this study also aims at gaining a deeper understanding of the interaction processes within firms, which develop MO at the individual-employee level and can thus help with mindful marketing execution. Previous research shows MO to be an effective strategic effort leading to mindful marketing (Malhotra, et al. 2012). We extend current mindful marketing literature by showing that mindful marketing behavior is actually based on information processing through proactive firmwide interactions (Sheth and Sisodia 2006; Langer 1997).

For the first issue, this study contributes a network perspective on how such interaction processes determine strategic mindful marketing execution at the individual-employee level. Methodologically, this study shows the direct effects of intrafirm networks as important enablers of mindful marketing execution. For the second issue, this study includes a detailed analysis of how individual employees may execute mindful marketing. To implement mindful marketing, firms may require all employees to respond with equally high levels of mindful marketing. However, they may not be able to do so even if they choose to because the interaction process can put them in an unlikely position to either share or generate information flow about
customer needs, or respond to such information. Therefore, this study presents an integrated view of both firm- and individual-level mindful marketing enablers. It is only by linking the direct and indirect effects of all these variables that mindful marketing execution will be possible and effectively realized.

Implications
Theoretically, this study is one of the first attempts, to the best of our knowledge, to show evidence about the critical role of intrafirm networks in the mindful marketing study. This study assumes that such processes may have a transformational effect on individual employees in their effort to execute mindful marketing. However, so far strategic research literature generally has overlooked the transformational process of individual employees’ behaviors—in this case, the mindful marketing behavior under management that embraces mindful marketing. A recent study has dealt with a similar downside in MO research and has attempted to reveal the diffusion of strategic MO at the individual level (Lam et al. 2010). However, the authors of this study do not reveal the interaction process in which diffusion may actively take place.

The managerial implication of this study is that managers should pay attention not only to management efforts and employees’ HR attributes, such as business training, but also to the manner in which employees interact with each other; they might intervene in employees’ intrafirm networking activities. We conclude from this study that to obtain a high level of mindful marketing, employees should rely on an intrafirm advice network that can satisfy at least two requirements for the process of information dissemination. First, they must interact cross-functionally. The ratio of cross- and intra-functional ties in their interaction network ties should be high enough
to yield mindful marketing. This interaction is even more important when there is a high percentage of individuals who have strong cross-functional ties because managerial efforts can be weakened or wasted. Second, firmwide network interactions should be evenly distributed to avoid a block in information flow or an imbalance caused by network segmentation. Managers should intervene proactively to ensure that departmental connections are strong enough to fend off such tendencies.

**Directions for Further Research**

This study has several limitations. First, though the data this study uses has a network-perspective advantage because the natural size of firms is small enough for network predictions with a low possibility for bias, it is questionable how such intrafirm networks would serve as important mindful marketing enablers in large firms with more heterogeneous networks. Second, now that we have linked employees’ cross-functional network ties with their mindful marketing execution, it is not clear whether the network position itself was a consequence of mindful marketing. For example, a reward system may cause employees to generate more network ties that lead to information access. Causality is an important topic for further research; such information could make this network perspective more practical for managers to follow. Third, for mindful marketing execution, a longitudinal data set may provide more insight on how an intrafirm network would influence employee behavior in a firm that espouses mindful marketing. Our data set is cross-sectional, which may limit our understanding in a temporal sense. Fourth, we found a gender difference in our study, but reasons behind this may be further reaching than is apparent. It might result from cultural factors or differences in the affective perception of males and females,
which may affect trust among employees and therefore cause differences in information processing.
CHAPTER 6: CONCLUSION

INTRODUCTION

This dissertation deals with two shortcomings in current market orientation (MO) literature: First, current MO research lacks breadth in individual-level studies; this limits our understanding of how MO can be implemented (Van Raaij and Stoelhorst 2008; Lam et al. 2010). Second, our understanding of interaction processes within firms that serve as open communication channels for MO at the individual-employee level is still insufficient (Lam et al. 2010). Previous studies show MO to be an effective strategic effort leading to positive business outcomes; a few studies are exceptions and show weak or even no positive link to business success (Slater and Narver 2000). These exceptions point to a popular track so far taken up by a majority of MO researchers: an overdue focus on firm-level constructs (Ellis 2006).

One possible explanation for the non-positive links may exist in intrafirm interaction processes. By definition, MO behavior is interaction based (Hartline, Maxham, and McKee, 2000; Lam et al. 2010). Such interaction, though overlooked ever since Kohli and Jaworski (1990) suggested it decades ago, can either contribute or hinder the adoption of MO. Especially the first two behavioral components of an individual MO—generating and sharing market information—depend on interactions among employees. MO is possible only when “all employees contribute varied information about market” (Schlosser and McNaughton, 2009, p. 235; Baker and Sinkula, 1999; Hartline and Ferrell, 1993) through networked communications within
firms (Kohli and Jaworski, 1990, p. 5). MO depends on individual employees to generate information flow about customer needs and share it with colleagues, who also work together through networked interactions to react to such informational input. The central intent of this dissertation is to display how such interactions may either strengthen or weaken MO implementation at the individual-employee level and how they influence the MO-to-business success link. In this regard, more detailed illustration is necessary for better understanding.

To implement a firm-level MO, firms must require individual employees to all respond equally with a high individual-level MO. However, these employees may not be able to respond even if they choose to because the interaction processes can make it difficult for them to either share or generate information about customer needs or to respond to such information. This dissertation assumes that such intrafirm interactions can have a transformational effect on individual employees. However, prior MO studies have generally overlooked such a transformation process of individual employees’ behaviors as a result of MO-espousing management. A recent study dealt with this downside and attempted to reveal the diffusion of MO at the individual level (Lam et al. 2010). The researchers used the classical theory of social learning and identified employees functioning as MO envoys and activists among fellow employees. The study approached MO implementation as a result of diffusion and contributed to research with a view similar to that of this dissertation. However, the authors of this study did not reveal the interaction process in which social learning takes place. This situation, in summary, creates a black box that clouds our sight of MO practice in the real corporate world.
This dissertation is composed of four empirical studies that not only describe MO at an individual level but also attempt to disclose how on-going interactions among individual employees can influence MO behaviors and further transform such MO behaviors into firm-level outcomes. MO may be emphasized by managers and supported by specific organizational systems, but first and foremost it must be adopted by individual employees. Ours is among the first attempts, to the best of our knowledge, to discover evidence for the critical role of intrafirm networks in MO study.

SUMMARY OF MAIN FINDINGS

This dissertation reports on four empirical studies of intrafirm social networks’ role in an MO-to-performance link. These are presented in Chapters 2 through 5 and include interrelated topics. In line with the four research questions of our research project, we studied whether and how intrafirm network interactions are related to individual employees’ MO behaviors.

Chapter 2: Intrafirm Network and Individual Employees’ MO Behaviors

Our first set of findings concerns whether and how intrafirm network embeddedness affects MO implementation. We assumed embeddedness had a moderating effect on the link between MO management efforts and individual employees’ MO behavior.
To better understand intrafirm networks, we distinguished two kinds of
network ties among employees: local and global ties. Our model estimation showed
the following results:

- An individual employee network position characterized by a high level of
  local ties increases the effectiveness of management commitment to MO on
  employees’ MO responses.
- An individual employee network position characterized by a high level of
  global ties significantly reduces the effect of MO-based rewards on employee
  information generating and sharing.
- An individual employee network position characterized by a high level of
  global ties is more likely to turn management commitment into MO behavior.
- We did not find, nor did we hypothesize about an individual-employee
  network position having a direct effect on MO implementation.

Chapter 3: A Knowledge Reservoir When As Time Goes By

Firms that adopt MO start enjoying the competitive advantages even in the initial
stages (Kumar, Jones, Venkatesan, and Leone 2011; Gebhardt, Carpenter, and Sherry
2006; Slater and Narver 1995). In line with the argument we proposed in Chapter 1,
such strategic benefits hinge on interaction processes that occur within intrafirm
networks. Employees interacting with each other gain knowledge and information
that can enable them to provide better market offerings on a continuous basis. The
intrafirm networks contribute by acting as links that transfer market and customer
needs information to create customer values and thus boost MO to achieve higher firm performance as well. The longer MO is practiced, the more benefits there will likely be, as long as it is well-supported by intrafirm networks.

Chapter 4: How To Transform Service Employees’ Market Orientation Behaviors Into Innovation

In the third empirical study, we examined how individual employees’ network embeddedness helps transform MO behaviors into the individual-level employee performance outcome of innovation. Because innovation at the firm level is one of the most important outcomes of MO, as shown in previous literature (Kirca et al. 2005; Han et al. 1998), we extended this argument to the employee level. We also further distinguished network embeddedness within friendship and advice networks. According to prior studies, both kinds of networks affect performance, but do so in different ways. We found that advice networks moderate employees’ ability to transform their MO behavior into innovativeness. We also found that friendship networks do not contribute to this transformation.

Chapter 5: Realizing Mindful Marketing by Using Intrafirm Networks: An Exploratory Study

The purpose of this study is to propose an empirical linkage between intrafirm network characteristics and individual-level mindful marketing. Based on current literature on network MO and mindful marketing research, this study presents one conceptual model to capture enablers of mindful marketing with a network approach.
We identified a pair of antecedents/barriers to mindful marketing execution: individual employees’ shared cross-functional ties and firm-level segmentation of the network. The study shows employees possessing more cross-functional ties are more likely to develop a higher level of mindful marketing. Meanwhile, we also find that firm-level segmentation of intrafirm networks will negatively affect employees as they execute mindful marketing. The proposed empirical linkage shows that managers should encourage employees to build cross-functional ties among themselves.

**DISCUSSION**

The central issue for this dissertation relates to the process and time effect of MO development. To address this issue, we used a social network analysis approach based on the definition of MO behavior, mainly to transfer and use information through interactions. Early on, leading scholars in the field suggested that MO begins with a behavioral concept at the business-unit level (Kohli and Jaworski 1990). Other scholars later extended the concept to the individual level (Voss and Voss 2000; Schlosser and McNaughton 2007; Lam *et al.* 2010). Our approach is to account for interaction processes taking place during and after MO implementation at the individual-employee level. We take into account the relational ties that explain interactions, the positions individual employees possess during the process, and the structural characteristics of the interaction networks as a whole. With these details, we put together a picture of how such interactions take place within firms. In so doing, we capture important idiosyncrasies of these interaction processes that can either impair or facilitate MO behaviors. Based on these observations, we can more accurately describe how MO behaviors can actually lead to business success. In
summary, the process perspective we take is an improvement on past approaches used in this field. Thus, the black box within firms that adopt MO can be open to both MO scholars and practitioners. The issue of MO implementation is thus brought to a new level.

MO scholars have also used other theoretical perspectives. One of the most influential perspectives is learning organization. MO is considered to characterize a firm’s *climate*, which hinges on organizational learning efforts (Slater and Narver 1995). Another important perspective is cultural, which stresses a series of organizational efforts to maintain and emphasize that MO is a clearly defined corporate culture (Homburg and Pfeffer 2000). In addition to its convincing arguments and well-documented conceptual model, the cultural perspective indicates exactly what MO can be, but it leaves out how it can be achieved throughout the firm. We do not learn the process for developing an MO culture. We hope the approach we used in this dissertation can help with both perspectives, thoroughly investigating the paths, leading either to an MO culture or to a learning organization that upholds MO. In this dissertation we map out the intrafirm networking processes that interact with individual behavioral variables in MO development, which are relevant for further understanding from both a learning-organization and a cultural perspective in MO studies.

According to Van Raaij and Stoelhorst (2008), MO research also uses a system perspective, which attempts to find out how organizational systems can help develop MO. This perspective generally limits its attention to formal organizational systems such as formalization, training, and MO-based rewards (Harris and Oghonna 2001; Ruekert 1994; Kohli and Jaworski 1990). From an organizational point of view,
not only does the formal system have an important role, but the informal one does as well. Using the interaction network approach, this dissertation captures the missing role of informal organizational systems within firms.

**Insights for Managers**

This study provides several managerial contributions. First, this study challenges managers to pay more attention to employees’ social activities in the workplace, so as to distinguish and increase highly innovative employees according to their social network positions. Second, this study adds, for the first time, to managers’ toolkits a social approach to MO practice. Managers should understand that it pays off to engage in social activities with their employees, so as to obtain better results in MO adoption and innovation. Special care should be taken to stimulate sharing of information through relational networks among colleagues. Therefore, employees with high network centrality should be more carefully identified because they may generate more innovative outcomes than those who have low centrality. We suggest that managers pay attention not only to management efforts and employees’ HR attributes, such as work experience, but also to the manner in which they interact with each other. The aim is to help employees become more innovative through acquiring more advantageous social network positions. In summary, managers should try to tap into employees’ intrafirm interactions to benefit the MO innovative-behavior link.

**Limitations and Avenues for Further Study**

This study also has several limitations: First, though the data this study uses have an advantage in their network perspective because the firms are small enough for
network prediction with minimal possible bias, it is unclear whether the MO effect is
similar to that in large firms. Second, because we employed a cross-sectional study,
we cannot be fully sure whether the network position itself was, to some extent, a
consequence of MO as well. Third, recent studies have shown that employees’
innovative behavior has a lot to do with social incentives (Sauermann and Cohn
2010), which may or may not be opposed to economic or pecuniary incentive
perspectives for innovative behavior (Sauermann and Cohn 2010; Arrow 1962).
Moreover, research has shown that individual social incentives can be broad enough
to link many social activities, one of which could be closely related to this study:
pleasure in sharing knowledge or expertise as an important achievement (Sauermann
and Cohn 2010). Further investigation is necessary to show the latent link between
network positions, social incentives, and other pecuniary or non-pecuniary factors
behind individual MO behavior.
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SAMENVATTING

In dit proefschrift staat het concept 'marktorientatie' (MO) (Engels: market orientation) centraal. Marktorientatie geeft een invulling aan het creëren van een marketingorganisatie waarbij de strategische focus ligt bij het reageren op marktveranderingen (Kohli en Jaworski 1990).

Dit proefschrift heeft het doel om meer inzicht te verschaffen over de totstandkoming van MO en het bepalen van de effecten op de (innovatie)prestaties van bedrijven en hun medewerkers. De onderzoeksvraag van dit proefschrift is: “Hoe dragen intra-organisatie netwerken van medewerkers bij aan het realiseren van MO, en hoe bepaalt MO de (bedrijfs)prestaties?”

Dit proefschrift veronderstelt dat de sociale interacties van medewerkers een essentiële rol spelen in het begrijpen van de MO-gedragingen van medewerkers en hun innovatieoutput. Het maakt gebruik van een sociaal netwerk (SN) (Engels: social network) perspectief om inzichtelijk te maken hoe de sociale interacties van medewerkers een effect hebben op de relatie tussen MO en bedrijfsprestaties, en hoe de individuele netwerkpositie van medewerkers een invloed hebben op hun MO-gedragingen en innovatieoutput. Vier gerelateerde studies zijn uitgevoerd om een antwoord te geven op deze onderzoeksvraag.

Het systematisch analyseren van sociale interacties van medewerkers levert volgens dit proefschrift een belangrijke bijdrage aan de MO literatuur. Het specifieke doel van MO is om impliciete klanten- en marktkennis effectief door te geven van een medewerker aan ander(en) om zodoende beter te reageren op veranderingen. Om een beter begrip te krijgen hoe MO-gedragingen bijdragen aan de performance van
bedrijven is het daarom wezenlijk om de sociale interacties tussen medewerkers te analyseren. Het onderzoeken van de rol van sociale interacties, zoals in de vier onderstaande studies beschreven, draagt bij aan de ontwikkeling van een nieuw onderzoeksgebied en nieuwe theoretische inzichten.

In de eerste studie (Hoofdstuk 2) wordt – op organisatie niveau – onderzocht hoe het intra-organisatie netwerk van individuele medewerkers een effect heeft op de relatie tussen de inspanningen van het management om MO te stimuleren en de MO-gedragingen van medewerkers. De resultaten laten zien dat de sociale interacties tussen medewerkers de voornaamste drijfveer zijn voor MO-gedragingen en bepalend zijn voor de effectiviteit voor dergelijke managementinspanningen.

In de tweede studie (Hoofdstuk 3) staat de rol van intra-organisatie netwerken nogmaals centraal. In dit hoofdstuk wordt onderzocht hoe de intra-organisatie netwerken op organisatie niveau een effect hebben op de relatie tussen de MO adoptie duur en klantenkennis en, als gevolg hiervan, op het creëren van een verdedigbaar concurrentievoordeel. De resultaten tonen een kromlijnig verband, in het bijzonder een omgekeerde U-relatie, aan tussen de duur van MO adoptie en klantenkennis. Het effect van de duur van de MO adoptie op het behalen van een concurrentievoordeel loopt specifiek via het vergroten van klantenkennis. Bovendien blijkt dat de dichtheid (Engels: density) van het intra-organisatie netwerk de link tussen de MO adoptie duur en klantenkennis versterkt. Het afnemende effect van MO adoptie duur op klantenkennis is minder sterk voor bedrijven met hechte netwerken in vergelijking met bedrijven met losse netwerkstructuren. Hiermee laat deze studie zien dat als organisaties erin slagen om een hechte intra-organisatie netwerk te realiseren dat zij een
kennisreservoir opbouwen dat voor een langduriger behoud van het concurrentievoordeel zorgt.


De resultaten tonen aan dat een centrale rol in het adviesnetwerk het effect van MO-gedragingen op de innovatieoutput van medewerkers versterkt, maar dat een centrale rol in het vriendennetwerk niet een soortgelijk effect teweeg brengt.

De vierde en laatste studie (Hoofdstuk 5) onderzoekt de effecten van intra-organisatie interacties in het licht van een opkomend marketingconcept: mindful marketing. Mindful marketing benadrukt het belang van informatiedeling en het reageren op informatie en stelt zich tot doel dat medewerkers snel en adequaat reageren op een potentieel brede en veranderende set van marktstimuli. Deze studie onderzoekt hoe een intra-organisatie netwerk individuele medewerkers helpt om tot een betere invulling van mindful marketing te komen. In het bijzonder analyseert het hoe de gedeelde cross-functionele verbanden van medewerkers en de segmentatie van het intra-organisatienetwerk op organisationeniveau bijdragen aan de uitvoering van mindful marketing. De resultaten laten zien dat naarmate medewerkers meer cross-functionele verbanden hebben, zij beter in staat zijn om mindful marketing uit te oefenen. De mate van segmentatie in het intra-organisatie netwerk heeft een negatieve
invloed; hoe meer een organisatie een gesegmenteerd netwerk heeft, des te minder is het in staat om mindful marketing uit te oefenen.

Samenvattend, dit proefschrift laat zien dat het analyseren van sociale interacties wezenlijke inzichten verschaf in het beter begrijpen wanneer en hoe medewerkers gestimuleerd worden om MO-gedragingen uit te voeren, en hoe deze gedragingen de bedrijfsprestaties bepalen.