OPTIMIZING THE MANAGEMENT AND STRUCTURE OF SALES ORGANIZATIONS

by

MOLLY AHEARNE

(Under the Direction of John Hulland)

ABSTRACT

My dissertation focuses on critical facets of sales management and organizational performance, consisting of two interconnected essays. In Essay 1, I investigate the effectiveness of performance rankings as a motivational tool within sales organizations. I explore the impact of displaying various types of information alongside rankings—limited information (rankings and sales performance), expanded information (rankings, performance, and salespeople's names), and full information (rankings, performance, names, and sales quotas). Through a cross-industry observational study of over 27,000 salespeople, my findings reveal that the expanded information has the greatest impact on improving salesperson performance. Interestingly, the full information condition did not result in a performance improvement compared to a control condition with no ranking information. These findings highlight the critical importance of selecting the most relevant performance information to pair with rankings in order to maximize their effectiveness in motivating salespeople. In Essay 2, I investigate the implications of the growing prevalence of inside sales roles across various industries. Using a unique dataset comprising 194 firms' sales structures, merged with several secondary data sets, I explore how a firm's proportion of inside salespeople affects revenue. This study reveals that while inside sales structures can be beneficial for some firms, it is not a universally appropriate design for all organizations. I find this relationship is highly contingent on various factors, specifically the

complexity of a firm's products, the competitive intensity of a firm's industry, a firm's experience within its industry, the span of control in a firm's sales organization, the geographic dispersion of a firm's sales force, and the proportion of farmers in a firm's sales force.

INDEX WORDS: Sales Management, Performance Rankings, Inside Sales, Sales Force Structure

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CHAPTER 1

INTODUCTION AND OVERVIEW OF THE DISSERTATION

Sales organizations serve a vital role to virtually every business entity, regardless of industry, size, or specialization. These dynamic units bear the monumental responsibility of not only driving revenue but also forging critical relationships with customers. Consequently, the significance of sales organizations cannot be overstated, as they are the primary drivers of an organization's growth, profitability, and long-term sustainability (Zoltners et al. 2004). Moreover, sales organizations are the direct link between a company and its customers. They are the face and voice of the organization, representing its values, mission, and offerings to the outside world. As such, the manner in which salespeople interact with their customers can profoundly impact an organization's reputation, brand perception, and customer loyalty (Homburg et al. 2011; Lawrence et al. 2021; Palmatier et al. 2007).

The way in which organizations manage and structure their sales force acts as a central pillar to the effectiveness of the entire organization. Effective leadership and a supportive organizational framework are essential components of successful sales organizations (Boichuk et al. 2014). Optimized structures enable sales organizations to operate efficiently, adapt to changing market dynamics, and align with evolving customer expectations. Furthermore, they foster an environment where salespeople are motivated, engaged, and equipped to best anticipate and respond to customer needs. In an era characterized by heightened competition, digital transformation, and the ever-evolving nature of customer behaviors, the significance of optimizing the management and structure of sales organizations becomes all the more pronounced. Businesses that invest in this imperative position themselves to thrive in the face of

challenges, seize opportunities for growth, and remain agile and adaptable in a dynamic marketplace. Ultimately, the success of a business hinges significantly on the effectiveness of its sales organizations. In consideration of the paramount role sales organizations play in today's business environment, my thesis focuses on how organizations can best manage and structure their sales forces to achieve optimal business outcomes.

My first dissertation essay examines the effectiveness of using performance rankings and additional relative performance information as a motivational tool to improve salesperson performance.

U.S. firms allocate a substantial annual expenditure of approximately $3.6 billion towards enhancing sales performance through management practices and tools (Columbus 2018). One of the most common tools used by sales managers to induce competition and enhance salesperson performance is the disclosure of comprehensive salesperson rankings based on key performance metrics. While performance rankings play a prominent role in sales performance management practice, the extent of their impact in motivating salespeople and fostering performance improvement has received limited attention from sales researchers. Furthermore, the scant research available on performance rankings outside the sales context has failed to explore the influence of presenting different types and amounts of relative performance information alongside performance rankings. Given that technological advancements have provided organizations unprecedented access to vast quantities of employee-related information, it has become more important than ever for sales managers and organizations to understand which types of information, if published alongside rankings, would maximize their effectiveness.

To address this knowledge gap, I examine whether performance rankings do, in fact, effectively motivate salespeople to improve their performance. Further, I explore how this

effectiveness varies depending on the extent of information disclosed to salespeople alongside rankings, by comparing salespeople's performance improvement under three distinct information conditions. Moreover, I identify key factors, including a salesperson's variable compensation share, ranking group size, and tenure, that impact the effectiveness of each performance ranking condition. This research provides novel insights not only to a number of different literature streams but also to sales managers by providing clear, actionable implications for motivating and enhancing the overall performance of their sales organizations.

My second essay examines how a sales organization's structure, specifically its proportion of inside salespeople relative to the total number of salespeople, affects firm revenue.

The world of sales has witnessed a significant paradigm shift in recent years with the rise of inside sales (Thaichon et al. 2018). While traditional outside sales required representatives to meet potential customers face-to-face, often involving extensive travel and in-person presentations, inside sales occurs remotely, leveraging digital tools, phone calls, and virtual meetings to interact with leads and close deals. While the rise of inside sales presents new opportunities for efficiency and scale, it's essential to recognize that this model might not be a one-size-fits-all solution. Different organizations have unique needs, customer bases, and product offerings. For some, the personal touch and relationship-building potential of face-to-face interactions inherent in outside sales might be critical to their sales process. Additionally, specific product offerings or services may require in-person demonstrations or consultations, making the transition to inside sales less feasible. Hence, while many firms may reap the benefits of a shift to inside sales, it's crucial for each organization to assess the potential impacts and challenges specific to their context before deciding to utilize an inside sales model.

This study provides a comprehensive understanding of the factors that influence the effectiveness of inside sales to equip sales managers with the necessary information to assess the suitability of inside sales for their specific context. Specifically, the effectiveness of utilizing an inside sales structure is highly dependent on characteristics of firms and the industries in which they operate, specifically, the complexity of a firm's products, the competitive intensity of a firm's industry, and a firm's experience within its industry, and firms' decisions regarding the structure of their sales force, specifically, the span of control in a firm's sales organization, the geographic dispersion of a firm's sales force, and the proportion of farmers in a firm's sales force. This research provides managers with invaluable insights to make well-informed decisions regarding whether the transition to inside sales would align seamlessly with their organization's unique characteristics.

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CHAPTER 2

SALES PERFORMANCE RANKINGS: ARE THEY HELPFUL OR HARMFUL?[1]

[1] Ahearne, Molly, Yashar Atefi, Mohsen Pourmasoudi, and Son K. Lam. Submitted to Journal of Marketing, December 31, 2022.

Abstract

Although performance rankings are commonly used as a motivation tool by sales organizations, research on their effectiveness remains limited. The scant research that has examined performance rankings has not looked at the effect of displaying various types of information alongside rankings. Given that technological advancements have provided organizations with unprecedented access to vast amounts of data, it is crucial for organizations to understand which types of information, if published alongside rankings, would maximize their effectiveness. This research addresses the gap in the literature by examining the differential effects of performance rankings across three information conditions: *limited information* (rankings published with salespeople's performance), *expanded information* (rankings, performance, and salespeople's names), and *full information* (rankings, performance, names, and sales quotas). In a cross-industry observational study of over 27,000 salespeople from over 170 firms, I find that the expanded information condition has the greatest effect on improving salespeople's performance, while the effect of the full information condition is not significantly different from the control condition, which did not use performance rankings. I examine how these effects are moderated by salespeople's variable compensation share, ranking group size, and tenure, providing further insights into the benefits and costs of publishing additional information alongside rankings.

Introduction

U.S. firms spend an estimated $3.6 billion annually on sales performance management and improvement practices and tools, which have recently become one of the highest priority investment areas for sales organizations (Columbus 2018). One of the oldest and most common methods to stimulate rivalry among salespeople and motivate performance improvement is publishing the full rankings of all salespeople on key performance metrics (Young 2014; Zoltners, Sinha, and Lorimer 2011). The goal of publishing performance rankings is to provide feedback to all salespeople by disclosing their performance relative to their peers, thereby creating a competitive motive for performance improvement (Frederickson 1992; Gill et al. 2019; Hazels and Sasse 2008; Young 2014). Also known as 'stacked ranking' or 'forced ranking' in some contexts, performance rankings aim to motivate salespeople at *all* performance levels *solely* through providing them with information about their rank (Frederickson 1992; Gill et al. 2019).

This distinction sets performance rankings apart from other performance management practices, such as sales contests, where only a) the leaderboard ranking, as opposed to everyone's ranking, is typically published, b) the isolated impact of ranking information is confounded by the presence of the contest and the contest prize, and c) a large portion of the sales force are disengaged from the contest except for those who have a realistic chance of winning the contest prize (Lim, Ahearne, and Ham 2009; Murphy, Dacin, and Ford 2004). In addition, performance rankings serve as a regular feedback mechanism and a part of periodic performance evaluations, whereas contests are short-term tactics tied to promoting specific objectives (Kalra and Shi 2001; Young 2014; Zoltners, Sinha, and Lorimer 2011).

Despite their importance and prevalence in sales practice, performance rankings have received meager academic attention among sales researchers, who have focused primarily on other competition-inducing practices, such as sales contests (e.g., Kalra and Shi 2001; Krishna and Morgan 1998; Lim, Ahearne, and Ham 2009). To the best of my knowledge, I could not identify any published field research examining the effect of performance rankings on salespeople. Scholars in other disciplines have contributed to the scant literature on performance rankings, but the collective body of research on the topic remains largely limited. These scholars have studied topics such as the impact of an organization's use of performance rankings on job applicants' attraction to the organization (Blume, Baldwin, and Rubin 2009), raters' reactions to performance rankings (Schleicher, Bull, and Green 2009), performance rankings in the context of layoffs (i.e., ranking with the sole purpose of firing bottom performers; Giumetti, Schroeder, and Switzer 2015; Scullen, Bergey, and Aiman-Smith 2005), and the impact of rankings on the dissemination of best practices among non-competing peers (Song et al. 2018). Furthermore, field studies on the topic are rare, and the few rare instances that do exist do not closely resemble performance rankings in a sales context (e.g., ranking of emergency room employees in a noncompetitive context [Song et al. 2018]).

Surprisingly, this research stream has not shed light on the importance of the type of information published alongside rankings. This insight is important for sales managers because technological advancements have made it possible for organizations to access more information than ever before regarding their salespeople. Therefore, it is essential for organizations and sales managers to identify and understand which type of information, if published, would enhance or diminish the effectiveness of performance rankings.

In this research, I conduct a large field study with salespeople and pose three primary research questions: (1) Do performance rankings effectively motivate salespeople to improve their performance? (2) Does this effectiveness vary by the type of information published alongside the ranking? (3) What are the conditions under which publishing certain information with performance rankings is more or less effective?

To examine these questions, I carried out a unique multinational and cross-industry observational study with over 27,000 salespeople from more than 170 firms, with the help of a major global supplier of sales performance management software. One of the main products the firm offers is a feedback dashboard that helps salespeople keep track of their customer pipeline and manage their sales activities. A central feature within these dashboards, if activated by the sales organization, would also allow salespeople to see their place, in terms of performance, in a full ranking of all their peers with the same job title in the firm. The extent of information disclosed to salespeople can vary depending on the settings defined by each organization.

Firms in my data set had the ability to choose between one of three dashboard options, which I refer to as *information regimes*. As summarized in Table 2.1, these regimes include (1) a *limited information regime*, in which all salespeople's performance, measured as the percentage of quota achieved, is displayed alongside their ranking, (2) an *expanded information regime*, in which in addition to performance and ranking, salespeople's identities are also displayed, and (3) a *full information regime*, in which salespeople see not only their performance, ranking, and identities of peers but also the quotas (i.e., sales targets) assigned to each salesperson for the ranking period. The control group consists of salespeople who used the dashboard solely for managing their customer pipeline and sales activities but were never provided with performance rankings or any other relative performance information.

Drawing on social comparison theory and its extensions (Festinger 1954; Wood and Taylor 1991), I theorize that the information regimes differentially activate self-improvement, self-presentation, and self-enhancement motives that influence the effectiveness of performance rankings in improving salesperson performance. I hypothesize and find that the limited and expanded information regimes lead to greater improvement in sales performance than the control group, with the expanded information regime having the greatest effect on performance improvement. I argue that these effects are mainly due to self-improvement motives in both conditions, augmented by self-presentation motives that are activated in the expanded information condition where salespeople's identities are also revealed. However, I argue that sharing quotas under the full information regime would make comparisons difficult for salespeople and open doors for self-enhancement tendencies through the justification of unsatisfactory ranking and performance. Consistent with my theory, I find that the full information regime did not result in a performance improvement compared to the control group.

I also examine three key moderating factors, including a salesperson's variable compensation share (i.e., share of variable to total pay in a salesperson's compensation), ranking group size, and organizational tenure. My selection of these moderators is based on Garcia, Tor, and Schiff's (2013) framework, which indicates that social comparison is a function of contextual and individual factors that are related to incentive structures, number of competitors, and individual differences. My analysis reveals novel findings regarding these factors.

First, a high variable compensation share in salespeople's total pay significantly increases the effectiveness of the expanded information regime but reduces the effectiveness of the limited and full information regimes in improving sales performance. I argue that these effects stem from a more direct link between pay and performance, stronger self-presentation concerns associated

with wage transparency, and a more important role that quotas play in determining earnings when a salesperson's variable compensation share is high. Second, I find that both limited and expanded information regimes work better in larger ranking groups, which is likely due to increased self-improvement and self-presentation motivations that result from having more individuals for comparison in the rankings. I also find support for my argument that the positive impact of ranking group size on self-improvement and self-presentation is counteracted by an increased difficulty of comparison under the full information condition, thereby reducing the effectiveness of performance rankings under this condition for larger ranking groups. Third, I theorize and find that a salesperson's tenure in their organization reduces the impact of the limited information regime without significantly impacting the effectiveness of the expanded information regime. I cite prior findings that point to lower motivation of employees with longer tenure to argue for a decreased self-improvement motivation, which reduces the effectiveness of the limited information regime, but cite work identity literature to argue for a countervailing effect of increased self-presentation motivation due to salespeople's heightened concerns of maintaining an 'experienced' worker identity in the expanded information regime.

These findings have important implications for sales managers, as they provide clear and actionable insights for improving the effectiveness and performance of their sales organizations. Sales leaders can use these findings to determine whether their specific situation is suitable for using performance rankings for their sales force and, if so, which type of information they should publish alongside the rankings to maximize their benefits. For instance, my findings suggest that if a sales organization's variable compensation share is high, organizations should use an expanded information regime achieve the most desirable results. Similar recommendations follow directly from the findings of this research.

I contribute to the extant literature on performance rankings, which a) has not studied performance rankings in sales, b) has not studied the impact of the type of information published alongside rankings, c) is mostly experimental with few field exceptions, and d) has focused primarily on non-competitive settings. Finally, I contribute to the sales literature by presenting the first field evidence exploring the impact of performance rankings as a competition-inducing practice that is widely used by sales organizations.

Theory and Hypotheses

In this research, I focus on relative performance rankings, defined as a performance management tool that ranks salespeople on their performance (e.g., Grote 2005). As is true in any ranking system, a focal salesperson's performance is evaluated relative to others. This relativity makes social comparison theory a germane theoretical lens for studying performance rankings. In this section, I briefly review the background literature on performance rankings and social comparison theory, followed by the conceptual development of my hypotheses.

Literature on Performance Rankings and Related Concepts

Performance rankings and sales contests. Sales contests are a class of special incentives designed to increase salespeople's effort on specific short-term objectives (Churchill et al. 2000). These incentives are designed for top-performing salespeople who pursue objectives that go beyond meeting regular quota attainment (Murphy, Dacin, and Ford 2004). In contrast, performance rankings are a part of regular performance evaluation and are used to motivate salespeople at all performance levels (Zoltners, Sinha, and Lorimer 2011). Perhaps due to this distinction, in sales contests, typically only the leaderboard is communicated, whereas, in performance rankings, the entire ranking from first to last is published. Furthermore, the purpose of performance rankings is to use ranking information alone to push salespeople to improve their

performance. In contests, however, the impact of salespeople's rank is confounded by the existence of the contest and the value of the contest prize, making it difficult to isolate the impact of the ranking from the impact of the contest itself.

Scholars who have studied sales contests often examine the role of several contest design factors, such as the size of the contest prize or the number of winners on performance of the contest (Hossain, Shi, and Waiser 2019; Kalra and Shi 2001; Krishna and Morgan 1998; Lim, Ahearne, and Ham 2009). Although marketing research on sales contests is rich (e.g., Casas-Arce and Martínez-Jerez 2009; Kalra and Shi 2001; Krishna and Morgan 1998; Lim, Ahearne, and Ham 2009), research on performance rankings is surprisingly sparse. Existing research on performance rankings, which has been carried out only in contexts other than sales, predominantly emphasizes the social aspect of rankings and draws on social comparison theory to explain behavioral change (Festinger 1954). Because of the uniqueness of performance rankings in sales relative to sales contests, they deserve further investigation.

Performance rankings in nonsales contexts. Researchers in educational psychology and management have investigated topics that can be closely related to performance rankings. However, my review of this literature reveals three gaps. First, the majority of studies that investigate performance rankings do not examine the impact of rankings on employee outcomes. Instead, they explore topics such as third-party reactions to the usage of performance rankings (Blume, Baldwin, and Rubin 2009; Schleicher, Bull, and Green 2009), or performance rankings in specific contexts such as layoffs (Giumetti, Schroeder, and Switzer 2015; Scullen, Bergey, and Aiman-Smith 2005). The few studies that do focus on employee outcomes exhibit at least one or more of the following characteristics: a) the phenomenon under study is not in the form of performance ranking of all people, but rather some arbitrary variation of feedback about relative

performance, b) the studies are experimental, and (c) the studies are carried out in contexts that are different from sales (students in classes, healthcare workers, etc.). For instance, Azmat and Iriberri (2010) investigate a context where students are given information on whether their performance is below or above the median of the class; Bandiera, Barankay, and Rasul (2013) study feedback information on the performance of stores against other stores; Ashraf et al. (2014) study healthcare trainees in Africa where they are provided with their rank and scores of the top four trainees; Song et al. (2018) examine rankings among emergency room physicians in the context of sharing of best practices; and many other studies are purely experimental (e.g., Gill et al. 2019; Gjedrem 2018; Kramer, Maas, and Van Rinsum 2016; Murthy and Schafer 2011).

Second, findings on the effect of rankings on performance are very mixed. On the one hand, studies have shown that performance rankings drive people to work harder (Azmat and Iriberri 2010; Hannan et al. 2013; Kuhnen and Tymula 2012). On the other hand, other studies indicate that performance rankings negatively affect performance because when ratees learn that they performed worse than their peers, they become demotivated and exert less effort (Ashraf, Bandiera, and Lee 2014; Bandiera, Barankay, and Rasul 2013; Gjedrem 2018). Given that sales organizations rely heavily on performance rankings, these mixed findings warrant further investigation. My research is unique in that it helps account for these inconsistent and contradictory findings by delving into an interesting and understudied aspect of performance rankings, which is the information provided alongside the ranking itself.

Third, prior research has not examined the role of the type of information provided alongside performance rankings. This is an important consideration, as technological advances have made it possible to provide salespeople with a greater amount of information at lower marginal costs. However, little is known about whether the effect of performance rankings

becomes weaker or stronger when, in addition to their rankings, managers give salespeople additional information related to their peers.

Social Comparison Theory: Self-Improvement, Self-Presentation, and Self-Enhancement

To examine the impact of performance rankings, research outside of marketing has primarily relied on social comparison theory. Social comparison theory states that people have a drive to evaluate their abilities by comparing themselves with others (Festinger 1954). Moreover, researchers have increasingly recognized that people engage in social comparison to serve other self-relevant goals, particularly self-improvement, self-presentation, and self-enhancement motives (Beach and Tesser 1995; Jordan and Audia 2012; Wood and Taylor 1991).

Self-improvement pertains to the betterment of oneself to emulate similar peers on a specific dimension, such as performance (Wood 1989). To that end, performance rankings allow salespeople to compare their performance to that of their peers, thereby motivating them to improve their performance and corresponding ranking. *Self-presentation* refers to the attempt to protect and enhance one's image and present oneself in socially desirable ways when performance or behavior is observed by peers (Schlenker and Leary 1982a, b). Finally, *self-enhancement* refers to people's desire to see themselves in a positive light (Beach and Tesser 1995; Jordan and Audia 2012). Those who do not rank highly on a desirable dimension are likely to engage in self-enhancement tendencies, such as cognitively changing social comparison bases, distorting the truth, or providing justifications for their performance, in order to reduce feelings of inferiority when engaging in social comparison (Jordan and Audia 2012). I argue that these three motives theoretically explain the differential effects of the information regimes on salespeople's performance improvement.

The Impact of the Information Regimes on Salesperson Performance

I argue that the type of information displayed alongside salespeople's performance ranking can differentially activate self-improvement, self-presentation, and self-enhancement motives. As a result, these information regimes have different effects on salespeople's performance improvement. In particular, under the limited information regime, firms provide salespeople with information regarding their performance and their ranking relative to unidentified peers (see Table 2.1). According to social comparison theory, such a relative ranking induces a self-improvement effect, such that salespeople are inspired by upward assimilation to perform better (Festinger 1954; Lockwood and Kunda 1997; Wood 1989). Therefore, compared to a condition without a formally provided performance ranking, a relative performance ranking using a limited information regime should motivate salespeople to improve their performance.

Under the expanded information regime, identities of all salespeople in the ranking are revealed in addition to their performance and rank (see Table 2.1). Therefore, the expanded information regime provides salespeople with performance feedback that not only includes their ranking but also makes the ranking identifiable and mutually observable. Research on social comparison theory has demonstrated that self-image concerns become active when information is identifiable (Bursztyn and Jensen 2017). Therefore, revealing salespeople's identities alongside their relative performance ranking should elicit an additional self-presentation motivation, above and beyond the self-improvement motivation, as people strive to maintain a positive self-image (Schlenker and Leary 1982a, b). As a result, compared to the condition without formally provided performance rankings, the performance-improving effect of performance rankings using an expanded information regime should be stronger and may even be stronger than that of the limited information regime.

Finally, under the full information regime, in addition to performance, rankings, and

identities, firms provide salespeople with information on quotas (i.e., sales targets) for the ranking period (see Table 2.1). A naïve prediction is that the additional information will make it easier for salespeople to engage in social comparison, thereby improving their performance. However, social comparison theory suggests that this additional piece of information can backfire (e.g., Wood and Taylor 1991), particularly since quotas often vary even across salespeople within the same role in a sales organization given differences in territories, customers, or past performance (Zoltners, Sinha, and Lorimer 2012). Social comparison theory posits that comparison targets (e.g., peers) must be similar on related attributes in order for individuals to compare themselves to their peers (Goethals and Darley 1977). Otherwise, these dissimilarities will cause individuals to cognitively change the comparison criteria they use for comparisons so that, ultimately, they are not inferior to their peers on those criteria (self-enhancement effect; Jordan and Audia 2012). Unequal targets open doors for such justifications or cognitive modifications of social comparison criteria, which not only weakens self-improvement motivations but also diminishes the value of positive self-presentation motivations since comparisons are not apples to apples in the focal salesperson's mind.

In sum, while the limited information regime likely enhances salesperson performance through self-improvement motivation, the expanded information regime exerts an even stronger impact on salesperson performance due to additional self-presentation concerns. However, the full information regime triggers self-enhancement motivation that relies on subjectively modified comparison criteria, thereby discounting the self-improvement and self-presentation motivations.

H_{1a}: Performance rankings lead to an increase in salesperson performance.

H_{1b}: The impact of performance rankings on salesperson performance depends on the information regime, such that no ranking /full information < limited information < expanded information.

The Moderating Role of Variable Compensation Share

Variable compensation plans are widely used by sales organizations accounting for roughly 40 percent of total sales compensation in the United States (Steenburgh and Ahearne 2012). In these plans, variable compensation is issued on top of base salary, with the amount fully contingent on performance. Unlike fixed compensation plans, compensation plans with variable compensation share, defined as the share of variable relative to total pay that salespeople receive if they meet their targets (John and Weitz 1989), emphasize the instrumental link between a salesperson's performance and pay, such that the higher a salesperson performs, the higher their compensation will be (Gerhart and Fang 2014; Vroom 1964). Because of this direct link between performance and pay, I expect variable compensation share to influence the effectiveness of the three information regimes.

Under the limited information regime, relative performance rankings are anonymized, and this regime works solely on the basis of self-improvement motives. However, substantial research has established that compensation plans with high variable compensation share induce the same self-improvement motivation in salespeople by tying their paycheck to their performance (Chung, Steenburgh, and Sudhir 2014; Bommaraju and Hohenberg 2018; Lim, Ahearne, and Ham 2009). Because of a more direct link between performance and monetary rewards, salespeople are already highly motivated to improve their performance, and the communication of their ranking is less likely to elicit more effort beyond the obvious financial gains salespeople will receive if they perform well. Therefore, I expect the limited information

regime to be less effective in motivating salespeople to improve their performance when their variable compensation share is high.

By contrast, when identities are revealed, compensation plans with high variable compensation share will likely amplify salespeople's self-presentation motivation, resulting in even greater performance improvement (Goethals and Darley 1977; Mas 2017; Smith et al. 2002). I expect even greater performance improvement under the expanded information regime because the wage transparency effect—the robust finding that employees are sensitive to how much their peers are being paid, particularly in contexts where they can observe or guess their peers' paychecks (e.g., Long and Nasiry 2020; Mas 2017)—will become salient, amplifying social comparisons when a higher proportion of their compensation comes from variable pay. The direct link between performance and pay under high variable compensation share signals how much salespeople at each performance level are making, which elevates self-improvement and self-presentation motivations when identities are disclosed. This effect is magnified by greater variation in salespeople's paychecks stemming from high variable compensation share (Habel, Alavi, and Linsenmayer 2021), as a slight gap in salespeople's rankings can lead to a significant difference in their take-home pay.

However, under the full information regime, salespeople are given additional information, including sales quotas, that makes it easier for them to engage in self-enhancement. As previously described, salespeople can perceive the additional information as an indication that their tasks are dissimilar (e.g., their sales quota is higher, so their tasks are more challenging) or attribute performance differences to reasons other than their abilities (e.g., their quotas are lower, so their territories are worse than others). These perceptions lead salespeople to attribute performance and pay differences to differences other than abilities, paving the way for the

negative effects of self-enhancement. To compound the matter, when variable compensation share is high, quotas play a more direct role in determining salespeople's paychecks, as a greater proportion of their compensation becomes tied to commissions against quotas. Thus, revealing differences in quotas will contaminate the wage transparency effect, as differences in quotas will lead salespeople to perceive that differences in pay are independent of differences in performance. Due to the fact that quota information likely overshadows performance ranking information when variable compensation share is high, the full information regime could potentially even hurt salespeople's performance in such schemes. As such, I expect variable compensation share to negatively moderate the impact of the full information regime on sales performance.

H_2: A salesperson's variable compensation share a) negatively moderates the impact of the limited information regime, b) positively moderates the impact of the expanded information regime, and c) negatively moderates the impact of the full information regime on a salesperson's performance improvement.

The Moderating Role of Ranking Group Size

The size of a salesperson's ranking group (i.e., the number of people ranked by the ranking feature) can impact the effectiveness of the different information regimes in a couple of different ways. First, the literature on innovation contests shows that when ranking group size increases, people become more competitive and exert more effort (Jiao, Ke, and Liu 2022). For instance, Boudreau, Lacetera, and Lakhani (2011) found that increasing the number of contestants in a design contest raises the overall contest performance. Moreover, in a study of software algorithm development contests with a winner-take-all format, Boudreau, Lakhani, and Menietti (2016) found that adding contestants makes those who have a chance of winning exert

more effort. Unlike these settings, performance rankings in sales are not set up in a winner-take-all fashion. Therefore, salespeople at all levels should experience heightened competition as a result of having more people to compare themselves to in the rankings. Thus, a salesperson's motivation for self-improvement should increase as the number of people included in the performance rankings increases.

Second, in larger ranking groups, the amount of effort required to achieve a desired level of self-improvement or self-presentation would appear higher. For instance, consider two median-level sales reps: one ranked 6th among 11 peers, and one ranked 26th among 51 peers. Although both rank in the middle of the group, the latter will feel that the required level of effort to improve performance is higher than that of the former. Therefore, a salesperson would need a further boost in effort in the second group to obtain a positive sense of self-image since 6th is perceived as a better rank than 26th, even though both rankings are equivalent relative to the group size. Therefore, a larger group should push salespeople to work harder to maintain positive feelings of their self-image, eliciting an even greater self-presentation motivation from salespeople in larger ranking groups.

For these reasons, I expect larger ranking groups to magnify the salutary effects of the limited and expanded information regimes. However, I also expect that the positive impact of group size on self-improvement and self-presentation will be discounted by an increased difficulty of comparison in the full information condition. With quotas revealed for a larger set of salespeople, the increased complexity of comparing one's performance with peers in light of the additional information regarding sales quotas opens doors for higher levels of self-enhancement through justification, which counteracts the positive impact of increased ranking group size on salespeople's self-improvement and self-presentation motivations. Therefore, I expect larger

ranking groups to further increase the negative self-enhancement motivations of salespeople, thereby reducing the effectiveness of performance rankings in motivating salespeople to improve their performance.

H_3: A salesperson's ranking group size a) positively moderates the impact of the limited information regime, b) positively moderates the impact of the expanded information regime, and c) negatively moderates the impact of the full information regime on a salesperson's performance improvement.

The Moderating Role of Salesperson Tenure

The literature on job design theory and motivation has demonstrated that longer organizational tenure contributes to decreased levels of intrinsic motivation (Ng and Feldman 2013). Researchers in this area have documented several manifestations of the reduced motivation that accompanies longer-tenured employees, from reported job boredom to lower ambition, lower achievement orientation, and reduced impact of organizational commitment on performance (Hunter and Thatcher 2007; Ng and Feldman 2013; Schmidt, Hunter, and Outerbridge 1986; Wright and Bonett 2002). Moreover, as employees survive longer in their organizations, their attitudes towards their jobs change, which in turn reduces their sensitivity towards certain organizational levers designed to influence them (Hackman and Oldham 1975; Kraemer and Gouthier 2014). In particular, newer members are more focused on proving themselves to their managers and establishing themselves as valuable members of the team while being concerned about organizational expectations from them and their ability to meet those expectations (Kraemer and Gouthier 2014; Norris and Niebuhr 1984). In contrast, those who remain longer in their roles are more experienced and less concerned about these issues (Hackman and Oldham 1975; Kraemer and Gouthier 2014; Norris and Niebuhr 1984).

For these reasons, I expect a salesperson's tenure, defined as the total length of time a salesperson has been with the organization (Bommaraju et al. 2018), to negatively moderate the impact of the limited information regime on performance improvement, being more effective for salespeople with shorter tenure and less effective for salespeople with longer tenure. This is due to the limited information regime working only through self-improvement motives, which longer-tenured salespeople inherently lack due to lower levels of intrinsic motivation that decline over their time at a firm. Additionally, organizational levers, such as presenting salespeople with relative performance rankings, which are designed to motivate salespeople to improve their performance, will work better for salespeople with shorter tenure because they are more concerned with proving their worth and satisfying managerial and organizational expectations. More tenured salespeople are less concerned about these issues and less sensitive to systems firms implement to trigger self-improvement desires and motivate them to exert more effort.

Despite its negative impact on motivation, longer organizational tenure has a significant impact on shaping one's workplace identity as an 'experienced' or a 'veteran' rep or an 'expert' on work-related matters (Brewer and Gardner 1996; Dutton, Roberts, and Bednar 2010). Workplace identities are closely tied to one's social image and have a significant impact on how individuals interpret their relationships with their colleagues and how their colleagues perceive them (Dutton, Roberts, and Bednar 2010). When individuals fall short of their workplace identity standards, or how their peers expect someone with a given identity to perform, they are likely to experience organizational shame and other negative emotions related to their perception of self and self-image (Daniels and Robinson 2019; Dutton, Roberts, and Bednar 2010). Therefore, I expect the lower motivation of the longer-tenured salespeople to be offset by their desire to maintain their workplace identity as experienced reps. With their rankings being visible to their

peers, salespeople with longer tenure will want to perform well to avoid negative feelings of shame by falling short of what their peers expect them to live up to. Therefore, I expect that the two forces of longer-tenured salespeople's reduced sensitivity to improvement incentives and the increased need to maintain workplace identity to countervail each other, meaning I do not expect a salesperson's tenure to moderate the effect of the expanded information regime.

However, when highly tenured salespeople are provided with any information to help justify their performance, they are more likely to use that information to make cognitive modifications of social comparison criteria to avoid experiencing feelings of shame associated with falling short of what is expected of them as part of their 'experienced' or 'veteran' work identity. These justifications or cognitive modifications will alleviate self-presentation concerns of experienced sales reps, as they will be able to attribute differences in performance to reasons other than a lack of their own abilities, which is what they pride themselves in when identifying as an 'expert' in work-related matters. Therefore, I expect longer-tenured salespeople to experience higher levels of self-enhancement motivations counteracting the positive impact of self-presentation concerns, leading a salesperson's tenure to negatively moderate the effect of the full information regime on performance improvement.

H_4: A salesperson's tenure a) negatively moderates the impact of the limited information regime, b) does not moderate the impact of the expanded information regime, and c) negatively moderates the impact of the full information regime on a salesperson's performance improvement.

Methodology

Research Context

The data is from a major global supplier of sales performance management software that serves firms across a wide variety of industries. The salesperson-facing side of the software is a dashboard that provides salespeople with performance feedback that enables them to manage their sales activities and, if activated by the firm, also enables them to see where they stand in terms of quota attainment relative to all peers with the same job title within their organization. Depending on the dashboard settings defined by each organization in my dataset, salespeople within each organization can see one of three versions of the ranking. The first version is a limited information version, where a ranking of all salespeople along with their corresponding quota attainment is displayed, but all other information regarding peers' identities and sales quotas is hidden. The second version is an expanded information version that displays the identities of all salespeople in addition to their ranking and associated performance (quota attainment). The third version is a full information version that displays salespeople's sales quotas along with their identities, performance, and ranking. Table 2.2 illustrates these three treatment groups. The control group is comprised of salespeople in organizations that have not enabled the dashboard's ranking feature and, therefore, do not provide salespeople with any relative performance information.

Data Collection

The dataset spans a 24-month period, from 2017 to 2019, and consists of a total of 27,883 salespeople from 178 different firms, including 1,774 salespeople from 24 firms in the limited information condition, 763 salespeople from 9 firms in the expanded information condition, 486 salespeople from 11 firms in the full information condition, and 24,878 salespeople from 134

firms in the control group. Table 2.3 reports the descriptive statistics and correlations between the key variables.

The main outcome variable is the change in salesperson performance, or change in percentage of quota attainment, between two time periods: pre-dashboard enablement, labeled "Pre," and post-dashboard enablement, labeled "Post." At the end of the Pre period, all firms that had acquired the dashboard's ranking feature displayed salespeople's performance rankings for the first time. I use Post, the period immediately following Pre, to observe the extent of performance change from the Pre period. Because firms in the dataset enabled their dashboards at different times, I controlled for the year fixed effects to control for any potential time-specific effects in my analyses. Additionally, because firms could choose to display the ranking feature on either a quarterly or yearly basis, I controlled for the duration of each period in my models.

Model Specification

I modeled performance change from Pre to Post as a function of the treatment variable and salesperson and firm level covariates. In particular, I specified the following model:

$$\text{Perf\_Change}_i = \alpha_i\, \text{treatment}_i + \beta \mathbf{X}_i + \boldsymbol{\gamma}\mathbf{Z} + \lambda \text{treatment}_i \times \text{VCS}_i + \mu \text{treatment}_i \times \text{RGS}_i + \Omega \text{treatment}_i \times \text{OT}_j + \epsilon_i, \quad (1)$$

where treatment is my three-level treatment variable; **X** is a vector of salesperson-level variables, including salesperson tenure, salary, months in current title, job title categories (e.g., field vs. inside sales, account executives), variable compensation share, and Pre performance; and **Z** is a vector of group, firm, industry, and period variables, including ranking group size, firm revenue group which includes seven categories from less than $100M to more than $1B, firm ownership type (i.e., public vs. private), industry sector, period duration, and calendar year. In addition to the main effect of the ranking conditions on the change in salesperson performance, I examine

the interaction of the treatment variable with a salesperson's variable compensation share, ranking group size, and organizational tenure.

Correcting for Selection

Due to the observational nature of the study, I employed additional methods to address potential selection and endogeneity issues related to treatment assignment. In particular, I implemented two alternative models: one based on propensity score modeling and the other based on Heckman-type selection models. Propensity score modeling is a highly effective method for addressing selection on observed covariates but may not be suitable in the presence of unobserved confounding variables (Guo and Fraser 2015). Accordingly, I replicate the results of my propensity score analysis with a Heckman selection model, which specifically corrects for selection on unobserved covariates (Li and Prahala 2007). Together, these models account for selection on both observed and unobserved covariates.

Propensity score weighting. Because the treatment variable in my model has four levels (i.e., three information regimes and the control group), standard propensity score matching techniques or selection models cannot be used, as they are designed to address endogeneity for binary treatment variables (Atefi et al. 2018; Guo and Fraser 2014; Imbens 2000). Therefore, I employed recent advances in addressing selection issues related to treatment variables with more than two values. First, instead of propensity *matching*, I used a doubly robust, generalized propensity score *weighting* method that is particularly suitable for addressing multivalued treatments (Fan et al. 2016; Fong, Hazlett, and Imai 2018; Imai and Ratkovic 2014). The propensity score weighting method I employed is the doubly robust version of the covariate balancing propensity score (CBPS; Fan et al. 2016; Imai and Ratkovic 2014). The CBPS estimates the coefficients of the multinomial logistic regression of the four treatment conditions

on important covariates, uses these estimates to compute the generalized propensity score and then generates the weights that are used in my main analysis as regression weights (Imai and Ratkovic 2014). Importantly, CBPS simultaneously optimizes the balance of the pretreatment covariates while estimating treatment assignment by imposing balance constraints on the standard regression score equation in an over- or just-identified generalized-method-of-moments estimation (Fan et al. 2016; Fong, Hazlett, and Imai 2018). Unlike other propensity-based models, CBPS is not sensitive to misspecification of the selection model and produces the most accurate results, even in the presence of many covariates or covariates with multiple levels, such as my industry variable or revenue groups (Fan et al. 2021; Ning, Sida, and Imai 2020). I modeled treatment assignment as a function of potential confounders using a multinomial regression with treatment conditions as the dependent variable and the pretreatment covariates as the right-hand-side variable. These covariates included individual variables such as Pre performance, tenure, months in the current title, salary in USD, and job title, as well as group-, company-, industry-, country-, and time-specific variables (e.g., ranking group size, year dummies, company revenue group, country region, industry). I applied the weights created by CBPS as regression weights to Equation 1.

Heckman selection model. Second, I applied a variation of Heckman-type selection models that allows for a multinomial specification of the selection equation (Bmyguignon, Fournier, and Gurgand 2007). For the selection model, I used the same multinomial regression, but also used formulas Bmyguignon, Fournier, and Gurgand (2007) outline to compute three inverse Mills ratios, which I added as selection correction terms to Equation 1 (Tucker 2010). I satisfied the exclusion restriction often recommended for selection models by excluding three variables from the second stage model that could conceptually affect a firm's treatment

assignment but could not affect the change in an individual salesperson's performance (Puhani 2000). These variables included firm ownership type, industry sector, and company revenue group, which despite being controlled for in the treatment assignment equation, were eliminated from the second stage (i.e., from Equation 1).

To satisfy the exclusion restriction, first, I argue that the firm's ownership type, which indicates whether a firm is publicly or privately owned, directly affects the firm's choice of the dashboard option, as private firms are inherently more reluctant to disclose information and will therefore be less likely to share large amounts of relative performance information with their salespeople. However, the private nature of these firms should not affect the change in a salesperson's performance. Second, a firm's industry sector should also have a direct effect on a firm's choice of dashboard option due to industry norms, market characteristics, or competitive factors, which affect their workforce policies or sales force practices. For instance, service industries are more stable in terms of consistent revenue generation and sales as they are more resistant to fluctuations in the economy that often drive the purchase of tangible goods and products (Anderson et. al 1997). Therefore, firms in the services sector may be more likely to provide regular performance feedback to their sales teams, as these service industries will experience more stable and consistent sales over time. This should not have a direct impact on the performance of individual salespeople within these firms, as all salespeople within each service or product firm will experience the same effects of economic fluctuations over time.

Lastly, I argue that excluding the firm's revenue group from the second stage equation further allows me to satisfy the exclusion restriction. Substantial research in business ethics and management has found that smaller firms are particularly sensitive to the disclosure and sharing of information regarding their immediate internal stakeholders (i.e., employees, customers,

suppliers) (Humphreys et al. 2006; Lepoutre and Heene 2006). Consequently, firms in smaller revenue groups are likely to have greater concerns and reservations with regard to sharing large amounts of relative performance information with their employees, which could lead them to select one of the more limited dashboard options. At the same time, the firm's revenue group should not have an effect on the change in a salesperson's individual performance from Pre to Post dashboard adoption, thus satisfying the exclusion restriction in the second stage of my selection model.

Results

To explore the impact of each information regime with respect to each other as well as the control group, I conducted a series of main-effects-only models reported in Table 2.4. In the first four models, the control group serves as the baseline. To best capture the contrast between the limited and expanded information conditions, I switched the baseline to the former information condition in Models 5–8.

Main Effects of Information Regimes on Performance Improvement

Consistent with my predictions in H_{1a}, I find that compared to the control group, where salespeople are not provided with any relative performance information, providing salespeople with relative performance rankings, as was the case in the limited information regime, effectively motivated salespeople to improve their performance. Next, compared with the control group, both limited and expanded information regimes led to a significantly higher performance improvement. However, the impact of the full information regime was either not significantly different from the control group or even significantly lower than the control group, corroborating my conjecture that revealing salespeople's sales targets publicly will backfire. Further, in Models 5–8, where the limited information regime was used as the baseline, I find that the expanded

information regime led to a significantly greater change in performance, while both the full information regime and the control group led to a significantly lower performance change.

Taken together, these findings support H_{1b}, highlighting the important role various pieces of information have in motivating performance improvement. More specifically, rankings displayed alongside performance-only information lead to a significantly higher performance improvement than no ranking. This impact is further enhanced when identities are also shown. However, when targets are also disclosed to salespeople in the full information condition, performance change drops to a significantly lower level than that in both the other two ranking conditions and, in some models, to an even lower ranking than that in the control group.

Moderating Effect of Variable Compensation Share

The results for the moderated effect of a salesperson's variable compensation share on the effectiveness of the three information regimes are illustrated in Table 2.5 and Figure 2.1. First, I find support for H_{2a}, the effect of the limited information regime on a salesperson's performance improvement is negatively moderated by a salesperson's variable compensation share. This supports my argument that salespeople are already highly motivated to improve their performance when their variable compensation share is high due to the clear connection between pay and performance. Thus, communicating their relative rank will not elicit additional effort beyond the clear monetary gains they will receive for performing well. Second, in support of $H_{2b,}$ I find a significant and positive interaction between variable compensation share and the expanded information regime, indicating that as a salesperson's variable compensation share increases, the expanded information regime works even better due to the amplification of the wage transparency effect. Lastly, as I predicted in H_{2c}, a salesperson's variable compensation share negatively moderates the effect of the full information regime on a salesperson's

performance improvement, as differences in quotas will dilute the wage transparency effect, leading salespeople to believe that differences in pay are independent of differences in performance abilities.

Moderating Effect of Ranking Group Size

In support of H_{3a} and $H_{3b,}$ I find that ranking group size positively moderates the effect of the limited and expanded information regimes on a salesperson's performance improvement. This result is consistent with my theory that as the number of individuals included in the performance rankings increases, so does a salesperson's motivation for self-improvement and self-presentation, resulting in a positive moderation effect. I also find the effect of the full information regime on a salesperson's performance improvement to be negatively moderated by ranking group size, in support of $H_{3c.}$ This supports my theory that larger ranking groups further increase salespeople's negative self-enhancement motivations, thereby reducing the effectiveness of performance rankings in the full information condition.

Moderating Effect of Salesperson Tenure

As I predicted in $H_{4a,}$ the positive effect of the limited information regime on a salesperson's performance improvement is weaker for salespeople with longer-tenure. This is likely due to a combination of longer-tenured sales reps reduced motivation for self-improvement and resistance to organizational levers intended to elicit self-improvement motivation. Additionally, as expected, I find no significant moderation effect of a salesperson's tenure under the expanded information condition, in support of H_{4b}. This result makes sense, given the two forces of longer-tenured salespeople's reduced sensitivity to improvement incentives and increased need to maintain their workplace identity counteract each other, nullifying any effect that longer-tenure would have on the expanded information regime. I did

not find support, however, for H_{4c} claiming that longer-tenure negatively moderates the relationship between the full information regime and a salesperson's performance improvement. Therefore, it is possible that the higher levels of self-enhancement motivations among longer-tenured salespeople are not strong enough to offset the positive impact of their self-presentation concerns, thereby neutralizing the effect of tenure on the performance of salespeople in the full information condition.

Discussion

While performance rankings play a prominent role in sales performance management practice, little effort has been made by sales researchers to understand their effectiveness in motivating salespeople and driving performance improvement. Moreover, the research that does exist on performance rankings outside of the sales context has yet to explore the impact of displaying different types of information alongside rankings. This is extremely surprising, given that technological advancements have provided organizations with unprecedented access to vast amounts of employee-related data. Thus, it is more critical than ever for sales managers and organizations to understand which type of information, if published alongside rankings, would maximize their effectiveness. To address this gap in knowledge, I examine whether performance rankings do, in fact, effectively motivate salespeople to improve their performance by conducting a large multinational and cross-industry observational field study.

In addition to allowing me to examine the effectiveness of motivating salespeople to improve their performance in a real-world context, my field study also allowed me to examine how this effectiveness varied depending on the extent of information disclosed to salespeople alongside rankings, by examining salespeople's performance improving under three unique information conditions. Moreover, I identify key factors, including a salesperson's variable

compensation share, ranking group size, and tenure, that impact the effectiveness of each of the three performance ranking conditions. This research provides novel insights not only to a number of different literature streams but also to sales managers by providing clear, actionable implications for motivating and enhancing the overall performance of their sales organizations.

Theoretical Contributions

This research contributes to several literature streams. First, literature on performance management practices in sales has focused almost exclusively on sales contests (e.g., Kalra and Shi 2001; Krishna and Morgan 1998; Lim, Ahearne, and Ham 2009), leaving other competition-inducing practices, particularly sales performance ranking, unexplored. This is highly problematic given that there are several distinctions between sales contests and performance rankings that warrant an investigation into the effectiveness of performance rankings themselves. To this end, I add to the sales literature by examining the isolated impact of providing salespeople with ranking information when it is not confounded by the presence of a contest and the contest prize. This allows me to examine how performance rankings motivate salespeople at *all* levels rather than just top-performing salespeople who have a realistic opportunity of winning the contest and associated prize.

Second, to the best of my knowledge, I provide the first study to ever examine the effect of performance rankings on salespeople in a real-world context. The vast majority of research on performance rankings has been conducted using lab experiments with student samples (e.g., Gill et al. 2019; Gjedrem 2018; Kramer, Maas, and Van Rinsum 2016; Murthy and Schafer 2011), and the few studies that have used field research have been conducted in contexts that are very different from a sales setting (students in a classroom, healthcare workers, etc.).

Finally, I contribute to the educational psychology and management literature, which has revealed inconsistent and contradictory findings regarding the effect of rankings on performance. This research helps account for these conflicting findings by investigating an interesting and unexplored aspect of performance rankings, namely the information provided alongside the ranking itself. My findings reveal significant performance improving effects across multiple unique information conditions revealing the instrumental role that different types of information have in driving the effectiveness of performance rankings.

Managerial Implications

This research reveals that it is naive for sales managers to believe that performance rankings will always motivate salespeople to improve their performance. Therefore, managers should keep in mind that in some situations, performance rankings can do more harm than good. Specifically, managers should refrain from providing their sales force with too much information alongside performance rankings as salespeople may start to perceive the additional information as an indication that their tasks are dissimilar or attribute the difference in performance to reasons other than their abilities. However, my findings also pinpoint situations where performance rankings can serve as a highly effective tool for stimulating competition among salespeople and motivating performance improvement. In particular, my findings suggest that providing salespeople with their ranking and associated performance, along with the full names of all salespeople in the ranking, leads to the highest levels of performance improvement.

Furthermore, sales leaders can use my findings to determine exactly what information to display alongside performance rankings in maximizing their effectiveness based on their organization's unique sales force design and structure. For example, if an organization's compensation structure is designed with a high variable compensation share, they may not see

significant performance benefits by providing their salespeople with performance rankings alone. However, by revealing salespeople's identities alongside their rankings, they can elicit self-presentation motivations from their sales force, as they all know that each other's pay is directly tied to their performance. Therefore, sales teams with higher variable compensation share should provide their sales force with names alongside rankings to elicit even higher levels of performance from their sales force. As another example, if an organization is made up of mostly salespeople who have been with the company for a long time, they may not experience the same performance improving effects from performance rankings as an organization with a newer, less experienced sales force. Therefore, they may need to consider alternative methods to motivate their long-tenured employees outside of relying solely on performance rankings.

Limitations and Future Research Directions

Despite my unique data set, large sample size, and efforts to control for external factors, my research has several limitations that should be acknowledged. First, I examine three informational regimes that are available in my data. Other sales dashboards may have other types of information displays, such as ranking on a focal dimension (e.g., quota achievements only) versus multiple dimensions (e.g., customer satisfaction, number of new accounts, etc.). Future research could investigate how other types of information effects salesperson performance. For example, when salespeople are ranked on multiple dimensions rather than a single dimension, how do they prioritize these dimensions relative to one another?

Second, while the primary focus of this research is on the extent of relative information disclosure, rather than the nature of the information disclosed, the latter could also play a significant role in shaping salesperson performance. This opens up intriguing avenues for future research, specifically investigations into how different types of relative information could

uniquely influence salesperson behavior and performance. Similarly, the framing of the information, whether as absolute rankings or percentile rankings, could also exert different psychological influences on salespeople, impacting their motivation, morale, and ultimately, their performance. Therefore, delving into the specific nature of information disclosure and its influence on salesperson outcomes presents a rich area for future research.

Third, to ensure tractability, I focused my empirical investigation on performance change from one period prior to one period after performance rankings were activated. However, the longer-term effects of performance ranking on salesperson performance would be worthwhile to explore. Firms in my study did not have the ability to switch or alternate between the different dashboard options. Therefore, it would be interesting to study what effect switching back and forth among various regimes would have on salespeople's performance. Additionally, instead of using a causal inference approach as I did in my study, researchers could examine longitudinal effects by using growth mixture modeling to identify clusters of salespeople who adapt to performance rankings differently over time. Such an approach could also account for other traitlike variables linked to salesperson performance (e.g., self-oriented vs. other-oriented competitiveness).

Fourth, an important institutional feature is that the effect of performance rankings does not require direct physical contact among peers, such as working in the same office. Research on online behavior, such as bidding and gaming, suggests that the effect of identifiable information, even when pseudonyms are used can still hold (e.g., Aiello and Svec 1993). Nevertheless, research examining whether these effects are enhanced or weakened in virtual versus in-person contexts would be useful. This is an important issue, given that the COVID-19 pandemic has completely changed the way firms organize and structure their sales forces.

Finally, my findings underscore the importance of performance rankings with mutually observable and identifiable information as drivers of sales performance improvement. However, practitioners indicate that performance rankings with identifiable information can have a negative impact on salespeople, especially in their competitive working environment (Zoltners, Sinha, and Lorimer 2011). Future research could examine the dark side of sales performance rankings on outcomes outside of performance (e.g., role stress, turnover, unethical sales behavior, etc.).

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TABLES

Table 2.1. Information Regimes.

Content Displayed in Performance Dashboards	Treatment Groups			
	Control group	Limited Information	Expanded Information	Full Information
▪ Full ranking of all salespeople	×	✓	✓	✓
▪ Salespeople's performance (quota attainment)	×	✓	✓	✓
▪ Salespeople's identities	×	×	✓	✓
▪ Salespeople's quotas (sales targets)	×	×	×	✓

Table 2.2. Illustrative Information Regimes: Limited (Left), Expanded (Middle), and Full (Right).

rank	name	quota attainment	quotas ($million)	sales ($million)	rank	name	quota attainment	quotas ($million)	sales ($million)	rank	name	quota attainment	quotas ($million)	sales ($million)
1	X	1.20	X	X	1	Carlsen	1.20	X	X	1	Carlsen	1.20	8.05	9.64
2	X	1.17	X	X	2	Firouzja	1.17	X	X	2	Firouzja	1.17	10.40	12.19
3	X	1.12	X	X	3	Ding Liren	1.12	X	X	3	Ding Liren	1.12	3.17	3.56
4	X	1.02	X	X	4	Caruana	1.02	X	X	4	Caruana	1.02	2.59	2.65
5	X	1.01	X	X	5	Nepomniachtchi	1.01	X	X	5	Nepomniachtchi	1.01	0.74	0.75
6	X	0.99	X	X	6	Giri	0.99	X	X	6	Giri	0.99	4.79	4.73
7	X	0.98	X	X	7	Aronian	0.98	X	X	7	Aronian	0.98	3.12	3.05
8	X	0.94	X	X	8	So	0.94	X	X	8	So	0.94	7.11	6.72
9	X	0.93	X	X	9	Mamedyarov	0.93	X	X	9	Mamedyarov	0.93	10.13	9.47
10	**Rapport**	**0.90**	**6.16**	**5.53**	**10**	**Rapport**	**0.90**	**6.16**	**5.53**	**10**	**Rapport**	**0.90**	**6.16**	**5.53**
11	X	0.88	X	X	11	Grischuk	0.88	X	X	11	Grischuk	0.88	5.28	4.64
12	X	0.87	X	X	12	Vachier-Lagrave	0.87	X	X	12	Vachier-Lagrave	0.87	8.43	7.30
13	X	0.82	X	X	13	Radjabov	0.82	X	X	13	Radjabov	0.82	9.90	8.09
14	X	0.80	X	X	14	Duda	0.80	X	X	14	Duda	0.80	7.69	6.11
15	X	0.79	X	X	15	Dominguez Perez	0.79	X	X	15	Dominguez Perez	0.79	2.27	1.79
16	X	0.74	X	X	16	Anand	0.74	X	X	16	Anand	0.74	5.75	4.28
17	X	0.73	X	X	17	Karjakin	0.73	X	X	17	Karjakin	0.73	3.94	2.87
18	X	0.71	X	X	18	Wang Hao	0.71	X	X	18	Wang Hao	0.71	6.16	4.35
19	X	0.66	X	X	19	Vitiugov	0.66	X	X	19	Vitiugov	0.66	2.16	1.42
20	X	0.65	X	X	20	Vidit	0.65	X	X	20	Vidit	0.65	9.31	6.03
21	X	0.61	X	X	21	Topalov	0.61	X	X	21	Topalov	0.61	9.83	5.96
22	X	0.59	X	X	22	Wei Yi	0.59	X	X	22	Wei Yi	0.59	1.27	0.75
23	X	0.57	X	X	23	Esipenko	0.57	X	X	23	Esipenko	0.57	1.79	1.02
24	X	0.55	X	X	24	Andreikin	0.55	X	X	24	Andreikin	0.55	7.90	4.35
25	X	0.55	X	X	25	Harikrishna	0.55	X	X	25	Harikrishna	0.55	6.64	3.62
26	X	0.49	X	X	26	Yu Yangyi	0.49	X	X	26	Yu Yangyi	0.49	7.04	3.43
27	X	0.47	X	X	27	Dubov	0.47	X	X	27	Dubov	0.47	7.61	3.60
28	X	0.44	X	X	28	Le Quang Liem	0.44	X	X	28	Le Quang Liem	0.44	9.30	4.09
29	X	0.37	X	X	29	Tomashevsky	0.37	X	X	29	Tomashevsky	0.37	1.87	0.69
30	X	0.37	X	X	30	Van Foreest	0.37	X	X	30	Van Foreest	0.37	7.85	2.87
31	X	0.36	X	X	31	Fedoseev	0.36	X	X	31	Fedoseev	0.36	10.24	3.64
32	X	0.35	X	X	32	Shirov	0.35	X	X	32	Shirov	0.35	2.59	0.92
33	X	0.35	X	X	33	Vallejo Pons	0.35	X	X	33	Vallejo Pons	0.35	2.36	0.83
34	X	0.33	X	X	34	Shankland	0.33	X	X	34	Shankland	0.33	2.76	0.91
35	X	0.33	X	X	35	Alekseenko	0.33	X	X	35	Alekseenko	0.33	9.77	3.21
36	X	0.32	X	X	36	Maghsoodloo	0.32	X	X	36	Maghsoodloo	0.32	8.34	2.67
37	X	0.30	X	X	37	Artemiev	0.30	X	X	37	Artemiev	0.30	0.76	0.23
38	X	0.25	X	X	38	Bu Xiangzhi	0.25	X	X	38	Bu Xiangzhi	0.25	8.79	2.23

Notes: Numbers are for demonstration only. Names are from the world ranking of professional chess players (all players with a FIDE ELO of 2700 and above); source: www.2700chess.com (accessed January 28, 2022).

Table 2.3. Descriptive Statistics and Correlations.

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Control	-	-	1										
2. Limited information	-	-	-	1									
3. Expanded information	-	-	-	-	1								
4. Full information	-	-	-	-	-	1							
5. Performance change	-.001	.52	-.08**	.01	.09**	.01*	1						
6. Pre performance	.70	.43	.02**	-.03**	-.06**	.09**	-.61**	1					
7. Tenure	49.70	57.4	.02**	-.01*	-.01*	0	-.05**	.13**	1				
8. Group size	198.7	335.6	.15**	-.06**	-.1**	-.08**	-.02**	.09**	-.11**	1			
9. Variable compensation share	0.53	.39	-.07**	.07**	.08**	-.03**	.1**	-.19**	-.09**	-.32**	1		
10. Months in current title	17.81	32.9	-.06**	.01*	.02**	.08**	-.06**	.08**	.45**	-.03**	-.07**	1	
11. Salary in USD	53,003	52,565	-.05**	-.04**	-.01	.13**	.04**	.03**	.07**	-.05**	-.61**	.05**	1

* $p < .05$; ** $p < .01$.

Table 2.4. Performance Improvement: Main Effects.

	(1) OLS I		*(2) OLS II*		*(3) CBPS*		*(4) Selection*		*(5) OLS I*		*(6) OLS II*		*(7) CBPS*		*(8) Selection*	
DV: Performance Change	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*	*Coeff*	*SE*
(Intercept)	-.12 ***	.01	-.11	.21	-.15	.22	2.60 ***	.23	-.04	.02	.05	.21	-.06	.22	2.64 ***	.23
Control group	Baseline		Baseline		Baseline		Baseline		**-.07** ***	.02	**-.16** ***	.03	**-.10** ***	.02	**-.04** *	.02
Limited information	**.07** ***	.02	**.16** ***	.03	**.10** ***	.02	**.04** *	.02	Baseline		Baseline		Baseline		Baseline	
Expanded information	**.28** ***	.03	**.24** ***	.03	**.25** ***	.03	**.24** ***	.03	**.20** ***	.03	**.09** *	.04	**.15** ***	.03	**.19** ***	.04
Full information	**-.12** ***	.04	**-.02**	.04	**-.05**	.03	**-.13** ***	.04	**-.20** ***	.04	**-.17** ***	.04	**-.14** ***	.03	**-.17** ***	.04
Variable compensation share	.08 ***	.01	.00	.01	-.02 **	.01	.01	.01	.08 ***	.01	.00	.01	-.02 **	.01	.01	.01
Group size	.10 ***	.01	.09 ***	.01	.07 ***	.01	.25 ***	.01	.10 ***	.01	.09 ***	.01	.07 ***	.01	.25 ***	.01
Pre performance	-.62 ***	.00	-.63 ***	.00	-.62 ***	.00	-.65 ***	.01	-.62 ***	.00	-.63 ***	.00	-.62 ***	.00	-.65 ***	.01
Tenure	.05 ***	.01	.05 ***	.01	.05 ***	.01	.08 ***	.01	.05 ***	.01	.05 ***	.01	.05 ***	.01	.08 ***	.01
Quota period length	.31 ***	.01	.13 ***	.02	.12 ***	.02	.18 ***	.02	.31 ***	.01	.13 ***	.02	.12 ***	.02	.18 ***	.02
Salary in USD	.09 ***	.01	.03 ***	.01	.03 ***	.01	.03 ***	.01	.09 ***	.01	.03 ***	.01	.03 ***	.01	.03 ***	.01
Months in current title	-.06 ***	.01	-.03 ***	.01	-.02 ***	.01	-.07 ***	.01	-.06 ***	.01	-.03 ***	.01	-.02 ***	.01	-.07 ***	.01
Public vs. private firm	.04 ***	.01	.01	.01	.04 ***	.01			.04 ***	.01	.01	.01	.04 ***	.01		
Industry fixed effects			Yes		Yes						Yes		Yes			
Firm revenue group			Yes		Yes						Yes		Yes			
Year fixed effects			Yes		Yes		Yes				Yes		Yes		Yes	
Job title fixed effects			Yes		Yes		Yes				Yes		Yes		Yes	
Country fixed effects			Yes		Yes		Yes				Yes		Yes		Yes	
Inverse Mills ratios							Yes								Yes	
Observations	27889		27883		27883		27883		27889		27883		27883		27883	
R^2/R^2 adjusted	.39/.39		.46/.46		.45/.45		.43/.42		.39/.39		.46/.46		.45/.45		.42/.42	

* $p < .05$; ** $p < .01$; *** $p < .001$. Notes: OLS = ordinary least squares.

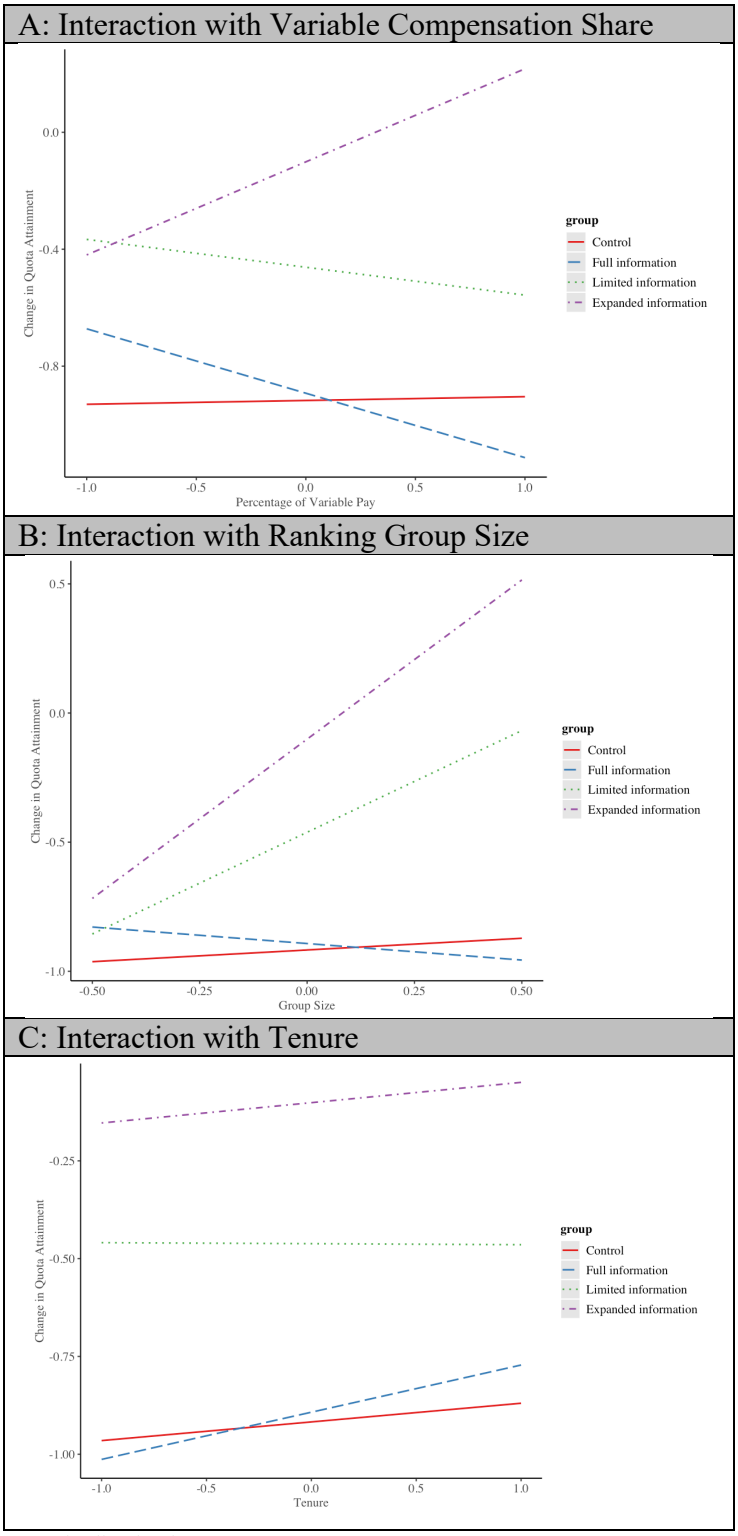
Table 2.5. Performance Improvement: Results with Interactions.

	OLS		*CBPS*		*Selection*	
DV: Performance Change	*Coeff.*	*SE*	*Coeff.*	*SE*	*Coeff.*	*SE*
(Intercept)	-.07	.21	-.07	.22	2.56 ***	.23
Limited information	.46 ***	.05	.42 ***	.04	.37 ***	.04
Expanded information	.82 ***	.14	.91 ***	.13	.72 ***	.14
Full information	.02	.19	-.01	.14	-.39 *	.19
Limited × variable compensation share	-.11 ***	.03	-.17 ***	.02	-.06 *	.03
Expanded × variable compensation share	.31 ***	.05	.34 ***	.04	.23 ***	.05
Full × variable compensation share	-.23 ***	.05	-.18 ***	.04	-.15 **	.05
Limited × group size	.70 ***	.11	.66 ***	.10	.81 ***	.11
Expanded × group size	1.1 ***	.29	1.39 ***	.26	1.03 ***	.30
Full × group size	-.22	.37	-.17	.27	-.79 *	.38
Limited × tenure	-.05 *	.02	-.05 **	.02	-.06 **	.02
Expanded × tenure	.00	.03	.03	.03	-.00	.04
Full × tenure	.07	.05	.09 *	.04	.07	.05
Prop. of variable pay	.01	.01	.01	.01	.02 **	.01
Pre performance	-.63 ***	.00	-.62 ***	.00	-.65 ***	.01
Group size	.09 ***	.01	.08 ***	.01	.23 ***	.01
Tenure	.05 ***	.01	.04 ***	.01	.08 ***	.01
Quota period length	.14 ***	.02	.13 ***	.02	.20 ***	.02
Salary in USD	.04 ***	.01	.04 ***	.01	.04 ***	.01
Months in current title	-.03 ***	.01	-.02 ***	.01	-.07 ***	.01
Ownership (public vs. private)	-.00	.01	.02	.01		
Industry sect fixed effects	Yes		Yes			
Company revenue group	Yes		Yes			
Year fixed effects	Yes		Yes		Yes	
Job title fixed effects	Yes		Yes		Yes	
Country fixed effects	Yes		Yes		Yes	
Inverse Mills ratios					Yes	
Observations	27883		27883		27883	
R^2/R^2 adjusted	.47/.46		.46/.46		.43/.43	

* p < .05; ** p < .01; *** p < .001. Notes: The control group is the baseline; all variables are mean-centered. OLS = ordinary least squares.

FIGURES

Figure 2.1. Moderating Role of Variable Compensation Share, Ranking Group Size, and Tenure.



Notes: Both x- and y-axes show standardized values.

CHAPTER 3

INSIDE SALES STRUCTURES AND FIRM REVENUE[2]

[2] Ahearne, Molly, Johannes Habel, Mohsen Pourmasoudi, and Thomas Steenburgh. Submitted to Journal of the Academy of Marketing Science, October 9, 2023.

Abstract

Inside sales roles are experiencing a notable increase in many industries. However, it is unclear how increasing the proportion of inside salespeople shapes firm outcomes. This study addresses this question using a unique dataset that includes the sales structure of 194 public and private firms, merged with multiple secondary datasets, and mitigating endogeneity by accounting for unobserved heterogeneity and employing a control function approach. The study reveals that the relationship between the proportion of inside salespeople and firm revenue is highly contingent on characteristics of the firm and its industry as well as its sales force structure. Specifically, I find that increasing the proportion of inside salespeople is more likely to increase firm revenue if firms (1) sell less complex products, (2) face lower competitive intensity, (3) are more experienced, (4) exhibit a narrower span of control in their sales force, (5) have a more geographically dispersed sales force, and (6) have a higher proportion of farmers among their sales force. These findings substantially advance inside sales theory and help managers adapt their sales force structure to the characteristics of the market and the firm in which they operate.

Introduction

Inside sales refers to salespeople who sell products and services remotely without traditional face-to-face interactions with customers (Shi, Sridhar, and Grewal 2023). Due to rapid advancements in technology and changes in buyers' expectations (Ahearne et al. 2022), the prevalence of inside sales is rising substantially within organizations (Chaker et al. 2022; Ohiomah et al. 2019; Shi, Sridhar, and Grewal 2023; Thaichon et al. 2018). Even before the COVID-19 pandemic, inside sales roles in the United States were growing at a rate that was 300 percent faster than traditional outside sales roles, creating an average of 750,000 new inside sales jobs per year (Harris 2019; XANT 2013). This growth reflected customers' preferences, with over 70 percent stating that they prefer inside sales to traditional face-to-face meetings (Harris 2019). The COVID-19 pandemic only accelerated firms' emphasis on inside sales, with almost 90 percent of sales moving to a virtual mode of interaction during the pandemic (McKinsey & Company 2020).

Despite the growth of inside sales roles, it is often unclear to firms whether and when deploying an inside sales force results in an increase in sales revenue. This is because inside sales comes not only with unique advantages but also with disadvantages. As an advantage, since inside salespeople use virtual communications (e.g., phone, video chat, emails) for all selling activities, they have the ability to reach a greater number of customers and can do so more quickly than outside salespeople (Thaichon et al. 2018). Thus, selling through inside sales might increase a firm's sales revenue. On the other hand, firms are more likely to miss out on critical sales opportunities when they rely too heavily on inside sales (Gessner and Scott 2009). Additionally, inside salespeople face a higher rate of rejection and increased uncertainty due to

the lack of face-to-face interaction with their customers, which fosters stress, reduces morale, and might thereby negatively impact sales revenue (Sleep et al. 2020).

While prior research has begun to reveal the distinct advantages and disadvantages of inside sales, I was unable to identify any academic research examining the net effect of utilizing inside sales on a firm's sales revenue (see Table 3.1). Additionally, I was unable to find any studies examining context-specific factors that moderate this effect. Further, the prior research on sales force structure has been almost exclusively qualitative in nature and has, therefore, rarely been subjected to quantitative testing. This represents an important gap in the literature that likely stems from a lack of quantitative data. Thus, important questions on the effectiveness of inside sales remain unanswered, which, if answered, would provide guidance to both academic researchers and managers on how and when to appropriately utilize inside sales within organizations.

To address these gaps in the literature, I examine how the proportion of inside salespeople relative to the total number of salespeople (hereafter proportion of inside salespeople) affects sales revenue. I identify potential contingencies by conducting preliminary qualitative interviews with 12 top and senior sales managers from major companies representing a total of over 550 billion in annual revenue. These contingencies fall into two categories. The first category includes characteristics of firms and the industries in which they operate, specifically, the complexity of a firm's products, the competitive intensity of a firm's industry, and a firm's experience within its industry. The second category contains variables pertaining to firms' decisions regarding the structure of their sales force, specifically, the span of control in a firm's sales organization, the geographic dispersion of a firm's sales force, and the proportion of farmers in a firm's sales force.

To test these contingencies, I leverage a unique longitudinal dataset of 194 public and private firms over a four-year period created by matching firm-level proprietary sales force structure data with data from several secondary sources, namely, COMPUSTAT, PrivCo, firms' annual reports, and Massachusetts Institute of Technology's Observatory of Economic Complexity. I employ a two-way fixed effects regression model to examine the relationship between a firm's proportion of inside salespeople and the firm's sales revenue. I also employ a control function approach to further mitigate potential endogeneity concerns (Wooldridge 2015). I find that the effect of a firm's proportion of inside salespeople on firm revenue varies substantially depending on the contingency factors conceptualized and tested. Specifically, the effect of inside sales on a firm's revenue is positively moderated by the firm's age, the geographical dispersion of its sales force, and the proportion of farmers in its sales force; conversely, the effect is negatively moderated by the complexity of a firm's products, the competitive intensity of its industry, and the span of control in its sales organization.

This research makes three key contributions to the marketing literature. First, my research is the first to quantitatively investigate the relationship between a firm's proportion of inside salespeople and firm revenue. I thereby complement the body of conceptual and qualitative literature (Chaker et al. 2022; Sleep et al. 2020) as well as individual/team-level literature (Shi, Sridhar, and Grewal 2023) on inside sales. Second, I contribute to the literature on the contingency view of the firm by identifying conditions that shape the effect of the proportion of inside salespeople on firm revenue. Third, my study directly responds to the repeated calls for macro-level research in the sales area. A review of sales and sales management studies published between 1982 and 2008 revealed that the individual salesperson was the unit of analysis in the vast majority of sales performance studies (Verbeke, Dietz, and Verwaal 2011). Therefore, a

number of journal articles proposed macro sales force research ideas to help stimulate and direct future research in this area (Blocker et al. 2012; Cron et al. 2014). Responding to these calls, my study investigates a macro-level phenomenon and lays the foundation for future macro-level research in this area.

This research also has important implications for managerial practice. First, I did not find a significant positive relationship between the proportion of inside salespeople and revenue. Therefore, sales managers should not perceive inside sales structures as being universally advantageous. Second, I provide managers with the information they need to determine whether the transition to inside sales is well suited for their organization. For example, a firm that sells simple products or has extensive experience is more likely to benefit from ramping up their inside sales force. However, a transition to inside sales may not be the best option for a firm with complicated products or for a firm operating in a cutthroat industry. Third, I provide firms with guidance on how they can improve the performance of their inside sales force. More specifically, managers can benefit from limiting their span of control and thus working more closely with inside salespeople.

Conceptual Background

An inside salesperson is an individual who does not travel to meet customers but instead generates sales through non-face-to-face interactions using technological mediums such as telephone, video conferencing, Web chats, text, and e-mail communications (Gessner and Scott 2009; Sleep et al. 2020). In contrast, an outside or field salesperson is an individual who travels to meet face-to-face with customers in order to generate sales (Chaker et al. 2022; Shi, Sridhar, and Grewal 2023). Inside salespeople differ from telemarketers whose role is highly scripted and limited to selling-only responsibilities with no expectation of relationship development (Sleep et

al. 2020). Inside salespeople have a broader, more significant role in which they interact with customers in highly adaptive exchanges and have responsibilities that closely resemble those of traditional or outside salespeople, such as relationship building, relationship management, and after-sale service (see Table 3.2).

The existing literature on inside sales remains largely limited. The few studies that do exist in the literature mostly focus on (1) the relationship between technology and inside sales and how this relates to the ongoing evolution and transition to inside sales, and (2) the distinctive advantages and disadvantages associated with an inside sales role. With regard to the first stream of literature, the decision to increase the use of inside sales has been primarily influenced by rapid advancements in technology and shifts in buyers' expectations (Chaker et al. 2022; Ohiomah et al. 2019; Thaichon et al. 2018). In particular, as customer relationship management (CRM) tools, sales force automation systems, and other web-based applications have become widely available, salespeople can effectively build and nurture relationships with customers remotely (Gessner and Scott 2009; Ramos, Claro, and Germiniano 2023). As a result, sales structures have shifted from a traditional emphasis on outside or field sales to the inclusion of an inside sales force (Gessner and Scott 2009; Mantrala et al. 2010; Shi, Sridhar, and Grewal 2023; Thaichon et al. 2018).

Additionally, the proliferation of new technologies has significantly altered the desires and expectations of customers in their interactions with salespeople (Ahearne et al. 2008, 2022; Ahearne and Rapp 2010). More specifically, customer expectations of salespeople and their organizations have increased significantly over time, such as expectations in relation to salesperson speed of response, frequency of communication, and customization of information and product offerings (Jones et al. 2005). Sales organizations have responded to changes in

customers' expectations by shifting their value propositions from product attributes and benefits to value defined by a firm's business systems and specialized sales forces. This includes utilizing specialized sales forces to organize and divide salespeople between outside and inside sales roles to serve customers most effectively (Shi, Sridhar, and Grewal 2023; Thaichon et al. 2018).

The second stream of literature has highlighted the distinct advantages and disadvantages associated with utilizing inside and outside salespeople (Conde and Prybutok 2021; Conde, Prybutok, and Thompson 2021). Specifically, as inside salespeople utilize virtual communications for all selling activities and do not spend time traveling to meet face-to-face with customers, they are able to connect with a greater number of customers regardless of time zone or location and can do so more quickly than outside salespeople, making inside salespeople more efficient and accessible to customers (Thaichon et al. 2018). However, firms are more likely to miss out on critical sales opportunities when they rely too heavily on their inside sales force (Gessner and Scott 2009). Outside salespeople are 40% more likely to convert a prospect than inside salespeople due to their ability to leverage in-person connections to build relationships with customers (McLeod 2021). The additional non-verbal and contextual cues available to outside salespeople are critical to their effectiveness in relationship development and interpretation of customers' specific needs (Sleep et al. 2020). While inside salespeople increasingly have access to video technology to provide greater access to non-verbal customer cues, such technology cannot fully compensate for face-to-face interactions.

This issue is explained by Media Richness Theory, which reveals that face-to-face interactions provide unmatched levels of interaction richness, as physical presence is a critical factor in being receptive to important non-verbal cues that cannot be detected via video technology (Ahearne et al. 2022; Hardwick and Anderson 2019). In addition to the high rate of

rejection experienced by inside salespeople, the constant reliance on analyzing verbal and digital cues inherent to establishing and maintaining digitally mediated relationships results in increased levels of uncertainty for inside salespeople in their interactions with customers (Sleep et al. 2020). These elevated levels of salesperson uncertainty are frequently accompanied by high employee stress and low employee morale among inside salespeople, which can ultimately hurt relationships with customers and thus lower sales revenue (Sleep et al. 2020).

Research Questions

Preliminary Qualitative Interviews

As mentioned before, prior research has not developed theory on how and when the proportion of inside salespeople affects firm revenue. The lack of theory renders it difficult to make predictions on these effects. To address this difficulty, following Shi, Sridhar, and Grewal (2023) I contextualize my phenomenon of interest through preliminary qualitative interviews with subject matter experts. I let these interviews inform my research questions, which guide my subsequent quantitative analyses. This procedure aligns with prior studies published by the marketing academy (Brady, Voorhees, and Brusco 2012; Kassemeier et al. 2022; Lambert-Pandraud and Laurent 2010; Schmitz et al. 2020; Schmitz, Lee, and Lilien 2014; Shi, Sridhar, and Grewal 2023) and should not be confused with a comprehensive grounded theory or theories-in-use study (Shi, Sridhar, and Grewal 2023; Zeithaml et al. 2020).

For the preliminary interviews, I chose a convenience sample of 12 managers (again, aligned with Kassemeier et al. 2022; Lambert-Pandraud and Laurent 2010; Schmitz et al. 2020; Schmitz, Lee, and Lilien 2014; Shi, Sridhar, and Grewal 2023) with significant experience in the management of inside sales forces, such as Chief Sales Officers and Vice Presidents of Sales of Fortune 100 companies (Table 3.3). The interviews were semi-structured along three themes. I

first asked participants to describe their sales organizations including the role of inside and outside sales therein. I thereby aimed to ease participants into the topic under investigation and to gain the contextual understanding required to dive deeper into participants' "lived experiences" (Corbin and Strauss 2015). Second, I asked participants to reflect on the effect of the proportion of inside salespeople on firm revenue. This discussion constituted the core of the interviews and aimed to inform my construct selection and theorization. Third, I probed into insights that I had learned from earlier interviews. I thereby aimed to ensure that I was privy to diverging perspectives on emerging themes and are thus able to build well-balanced theoretical arguments.

The interviews lasted 32 minutes on average. I audio-recoded and transcribed all interviews verbatim, ensuring accurate representation of the participants' responses. Then, I performed open coding (Saldaña 2016) to extract themes regarding the inside sales–firm revenue relationship. The open coding process began by immersing in the data through multiple close readings of the interview transcripts. During this phase, initial codes were generated, focusing on specific ideas, concepts, or themes related to inside salespeople's effectiveness. These codes were developed through an iterative process, constantly revising and refining them as new insights emerged (Corbin and Strauss 2015).

The open coding process followed established principles of qualitative research (Corbin and Strauss 2015; Langley 1999; Saldaña 2016; Zeithaml et al. 2020), allowing for the emergence of new codes and categories organically from the data, rather than imposing preconceived notions or predetermined frameworks. Once the open coding process had identified a comprehensive set of codes, I aggregated these codes into higher-order themes. This process involved grouping related codes together based on their similarities, overarching concepts, or shared underlying factors. Aggregating codes into higher-order themes provided a more concise

and organized representation of the data and helped to identify broader patterns and insights (Corbin and Strauss 2015).

Need for a Contingency Perspective

A key insight from my interviews is that the effect of the proportion of inside salespeople on firm revenue is highly contingent on contextual factors. Specifically, participants described this effect using terms such as "it varies," "can go both ways," and they frequently stated that "it really depends." I induced from these statements that the effect of inside sales on firm revenue might most adequately be conceived through the lens of contingency theory, which provides a major strand of thinking about firms and their structures and strategic actions (De Luca and Atuahene-Gima 2007). Contingency theory suggests that the effects of a firm's structural choices on its performance are moderated by characteristics of both the firm and the industry in which the firm operates (Zeithaml, Varadarajan, and Zeithaml 1988). In other words, contingency theory argues that firms seek a fit between their structural choices and their internal and external environment because certain choices may suit some firms better than others. Combining these tenets of contingency theory with the insights from my interviews, I suggest two categories of moderators that determine the inside sales–firm revenue relationship (see Figure 3.1). The first category comprises three characteristics of the firm and the industry in which it operates: (1) the complexity of a firm's products, defined as the degree to which specific expertise is necessary when evaluating products (McQuiston 1989); (2) the competitive intensity of a firm's industry, defined as the extent of rivalry among companies operating within the same industry (Berry, Seiders, and Grewal 2002); and (3) the firm's age, defined as the number of years since a firm has been established (Ding, Ni, and Xu 2021).

The second category comprises three characteristics of a firm's decisions regarding the structure of its sales force: (1) the firm's span of control, defined as the number of sales employees that a sales manager oversees (Wiseman et al. 2022); (2) the geographic dispersion, which I define as to the extent to which the firm's salespeople are spread across different regions; and (3) the proportion of farmers, which I define as the share of sales employees whose main responsibility is the serving of existing customers rather than the acquisition of new customers. In the subsequent sections, I elaborate on these contingencies, thereby integrating the results of my preliminary study with pertinent theory to derive formal research questions.

The Moderating Role of a Firm's Product Complexity

My first research question concerns the moderating role of a firm's product complexity in the inside sales–firm revenue relationship. During my qualitative interviews, Christine emphasizes that the "complexity of the product plays a massive role" in this respect. However, it is not clear whether complex products are best sold by an inside or outside sales force as both approaches offer distinct advantages to effectively meet customers' needs and ensure successful sales outcomes. On the one hand, when a firm sells highly complex products, customers have a greater need for detailed information and guidance throughout the sales process (Alavi et al. 2022). Inside salespeople have the advantage of being readily available to address customer inquiries, ensuring that customers have a clear understanding of the features of complex products, as well as their functionality and value proposition (Thaichon et al. 2018). The accessibility of inside salespeople allows for ongoing communication with customers, enabling inside salespeople to provide timely and accurate information to guide customers through the complexities of the product. By having a greater proportion of inside salespeople, firms can ensure that customers receive the necessary information and support in a timely manner,

ultimately increasing their customer's confidence in the product, thereby increasing sales revenue. In the words of Richard, "the more complex the product, then inside sales works a lot better," explaining for one of his products that

> "… it's so complex, you can use your time better getting on Zoom with someone and going through it all… whereas when you have… a less complex product, then it's easier to just have a conversation…" (Richard)

On the other hand, however, outside salespeople have the advantage of providing a more personalized and immersive sales experience (Sleep et al. 2020). Outside salespeople visit customers on-site, observe their operations firsthand, and therefore gain a deeper understanding of each customer's unique needs and challenges. By physically engaging with customers, outside salespeople build stronger relationships, establish more trust, and gather valuable insights that may not be apparent through virtual communication (Gessner and Scott 2009). In other words, the personalized nature of outside sales interactions helps create a strong connection between the customer and the salesperson, which is crucial when selling complex products that require a deeper understanding of the customer's specific context (Plötner, Habel, and Schmitz 2023; Shi, Sridhar, and Grewal 2023). These personal connections and interactions facilitate a higher level of trust, confidence, and understanding, which can ultimately lead to a higher likelihood of successful sales outcomes. As Cindy notes, "complex products require so much knowledge. So much knowledge on the organization, the way they're structured on their products, their differentiated value compared to the competition, and there is so much in-depth knowledge that would be hard to uncover with an inside sale force." To investigate which of these alternate predictions ultimately hold, I ask my first research question:

RQ_1: How does product complexity moderate the inside sales–firm revenue relationship?

The Moderating Role of Industry's Competitive Intensity

My second research question concerns the moderating role of industry's competitive intensity on the inside sales–firm revenue relationship. Interestingly, my qualitative interviews again suggest competing predictions for the effect of competitive intensity on the inside sales–firm revenue relationship. On the one hand, salespeople acting under conditions of high competitive intensity face customers who have many options. Therefore, in highly competitive environments, customers have greater relative market power than in less competitive environments (Appiah-Adu and Singh 1998). Accordingly, customers might be more demanding in more competitive industries. As inside salespeople are highly accessible and can respond rapidly, firms within industries of high competitive intensity may benefit from allocating a larger proportion of their sales force to inside roles. Carl explains that in a highly competitive industry "I'd have a bigger inside sales team" with the reason being that "I can get in touch with people more frequently through phone call [and] video call versus trying to get in front of people."

On the other hand, in industries with high competitive intensity, firms need to differentiate from one another to effectively compete (Plötner, Habel, and Schmitz 2023). As a consequence, salespeople are pressured to be a means of differentiation themselves by establishing close personal relationships with their customers (Yim, Tse, and Chan 2008). As was previously mentioned, face-to-face interactions with an outside sales force are most effective for establishing close relationships between salespeople and their customers. As Bill notes, "companies in highly competitive industries are always going to need to invest in face-to-face because it yields more lasting and deeper relationships," explaining that "it's a reflection of the human condition, that when people can breathe the same air and be in the same physical space, they form deeper and more lasting relationships." Given these competing predictions, I ask:

RQ_2: How does competitive intensity moderate the inside sales–firm revenue relationship?

The Moderating Role of a Firm's Age

Next, I explore the moderating role of a firm's age in the inside sales–firm revenue relationship. Again, participants from my interviews did not agree on the direction of this effect. This is because, for less experienced firms, there is often a need to strike a delicate balance between connecting with as many customers as possible (favoring inside sales structures) while also establishing strong, personal relationships with individual customers (favoring outside sales structures). To elaborate, when a firm is new to an industry, it lacks established relationships and extensive knowledge of the market (Hite and Hesterly 2001). By increasing the proportion of inside salespeople, a firm can more easily connect with a wide range of potential customers, leveraging various communication channels and digital tools and thereby rapidly build its customer base. Thus, a high proportion of inside salespeople can be instrumental in driving sales revenue for less experienced firms. Consider the following statement by Maddie:

> "It's not easy to create new customers via going up to a customer physically, whereas online you can address 100,000 new customers if you know what you're doing. Your volume of customers you are able to reach through online channels is so much bigger than physically going one by one by one to customers to ramp up your customer base." (Maddie)

Alternatively, in a firm's early stages, when a firm lacks a well-known reputation and established relationships, face-to-face interactions with customers through an outside sales force are invaluable. These personal interactions allow the firm to build trust, understand customer needs, and demonstrate its commitment to customer success. Only as the firm matures does it gradually establish relationships and build its reputation as customers become familiar with the firm's offerings and trust its expertise (Narayandas and Rangan 2004). At this point, a firm's emphasis can shift to prioritizing efficiency and operational effectiveness through a larger inside sales force as "the sales efficiency of having an inside sales team is so much higher" (Chelsea).

With an established reputation, customers may place more importance on the firm's track record, expertise, and value proposition rather than on face-to-face interactions. In other words, the initial investment in outside sales may help establish a firm's strong foundation, but as the firm's reputation grows, inside sales may become a more viable and effective approach to driving sales revenue. To determine which of these alternative predictions ultimately prevail, I pose my third research question:

RQ_3: How does firm age moderate the inside sales–firm revenue relationship?

The Moderating Role of a Firm's Span of Control in the Sales Organization

Another factor that participants of the preliminary study frequently mentioned is the firm's span of control in the sales organization. Maddie highlighted that "inside salespeople and outside salespeople require very different management." As with my previously mentioned moderators, the participants raised countervailing arguments regarding how the span of control affects the sales–firm revenue relationship. On the one hand, several participants voiced that inside salespeople require particularly close managerial supervision and thus a leader with a narrow span of control. Consider the following quote by Christine:

> "There's a lot more frequent discussions with inside salespeople to help make sure that they're learning the right things, that they're progressing in the right way, that I identify any gaps and take the right action to fill those. Whereas [for] outside salespeople, it's kind of expected that they would be able to do that themselves to some degree." (Christine)

This view aligns well with prior literature on inside sales. Specifically, as discussed previously, inside salespeople are required to adhere to more stringent processes than outside salespeople, which are enforced by behavioral controls to a larger degree (Sleep et al. 2020). This makes a narrower span of control particularly advisable for inside salespeople. In addition, inside salespeople face higher rejection rates (Sleep et al. 2020). Close supervision through a narrow span of control might help salespeople cope with these rejections and thereby help them

generate sales revenue. Lastly, as Chelsea stated, because inside salespeople typically "are more early career, you're probably going to need more hands-on coaching," and Jared confirmed that "you have to spend a little bit more time in the detailed nuances with inside salespeople."

On the other hand, several participants mentioned that inside salespeople need *less* managerial supervision than outside salespeople. The participants provided two reasons for this. First, inside salespeople are better integrated with other stakeholders in the organization (Shi, Sridhar, and Grewal 2023), which provides additional behavioral controls and reduces the need for managerial attention. For example, Fred explained:

> "Inside salespeople are much more connected to my operational people. They have daily meetings with operational people because they really don't get to see the technical problems or technical issues the customers have. They need to be up to date. That's why they are closer to the operations than the field salespeople." (Fred)

Second, in Fred's company, inside salespeople are "highly educated" and "usually have to sell only one service," rendering managerial supervision less important. Again, this view is collaborated with some notions in the emerging literature on inside sales. Specifically, as outlined previously, inside salespeople typically adhere to more stringent processes (Sleep et al. 2020), which potentially replaces the need for close managerial supervision. Thus, in summary, how the span of control moderates the inside sales–firm revenue relationship is not straightforward, leading me to ask:

RQ$_4$: How does span of control moderate the inside sales–firm revenue relationship?

The Moderating Role of a Firm's Geographic Dispersion

My next research question concerns the moderating role of a firm's geographic dispersion in the inside sales–firm revenue relationship. While Edward explains "physical location does have an impact" on this relationship, it is not immediately evident whether a greater proportion of inside salespeople would be most effective in generating sales revenue for dispersed or non-

dispersed organizations. On the one hand, when a firm's sales force is geographically dispersed, inside sales can offer distinct advantages. By leveraging technology and virtual communication channels, inside sales representatives can effectively connect with customers regardless of their location (Thaichon et al. 2018). This enables the firm to reach a broader audience, penetrate new markets, and generate sales revenue. As an example, consider the following quote by Cindy:

> "We are a European branch of an American organization covering all of Europe. Here it makes sense to have more inside salespeople because we're covering that many regions, but also the customers are so dispersed that there is not enough critical mass within one country." (Cindy)

However, on the other hand, when a firm's sales force operates across a broad geographical area, it becomes essential for its sales force to have a deep understanding of a multitude of local markets, cultures, and customer preferences. As Sabrina explains, "you want somebody in the market, you want somebody that speaks the language, you want somebody that understands the cultural affinities, that understands that marketplace" and concludes that "having a global footprint and being able to infuse local market knowledge and cultural affinities into the sales interaction is key." Outside salespeople possess the ability to cater to specific market conditions, overcome language barriers, and navigate cultural nuances. Therefore, in a geographically dispersed firm, an outside sales force offers a distinct advantage in generating firm revenue. Based on the unique benefits offered by each type of sales force, I pose the following research question:

RQ_5: How does geographic dispersion moderate the inside sales–firm revenue relationship?

The Moderating Role of a Firm's Proportion of Farmers

In sales terminology, farming refers to the practice of nurturing existing customer relationships. Conversely, hunting involves pursuing new leads and acquiring new customers. Firms with a high proportion of farmers cater to existing customers who tend to have elevated

expectations with regards to (1) greater accessibility to salespeople, and (2) more face-to-face interactions with salespeople (Habel, Alavi, and Linsenmayer 2021b; Harmeling et al. 2015; Kanuri et al. 2022). These two expectations point to conflicting conclusions regarding the role of the proportion of farmers in the inside sales–firm revenue relationship.

With regard to the first expectation, the participants highlighted that inside salespeople are particularly accessible to customers as a result of two main characteristics of their role. The first characteristic is that inside salespeople do not spend time traveling to meet with customers, which gives them more time to interact with and respond to existing customers. As Bret explains:

> "As an outside salesperson, I can have a fantastic day and have six or seven meetings… while my internal wholesaler is on the inside making 60 calls, talking to maybe 40 people. You multiply that out, and they can touch so many more people than I can." (Bret)

The second characteristic is that customers can easily contact and engage with inside salespeople as the nature of their role requires them to be consistently accessible through digital communication methods (Thaichon et al. 2018). Consider the following statement by Bill:

> "Inside sales makes the most sense for a company looking to extend and deepen its relationships with existing customers. Because at that point, you at least have an opportunity to leverage an existing relationship, which gets you over that accessibility hurdle. So people are more likely to take your call or interact with you. It also means that firms are better able to have more efficient communications, so briefer, more frequent communications with you to learn about what's new, what's changed, and how to solve a particular problem." (Bill)

In summary, firms with a higher proportion of inside salespeople are more likely to meet their existing customers' accessibility expectations, allowing farmers to generate higher revenue.

Regarding the second expectation, participants highlighted the importance of face-to-face customer interaction in firms that more heavily rely on farming. For example, Richard states:

> "They want you to come into their office, they want to see you, they want to talk about how the products are working… which makes them feel important. And the reason they feel important is because you've gone out to go see them. If you're just saying hey, let's do a zoom, then they don't feel valued." (Richard)

Therefore, as inside salespeople rely solely on remote interactions, they are not able to meet established customers' expectations for face-to-face interaction. Consequently, in firms with a higher proportion of farmers, a higher proportion of inside salespeople might be counter-effective in generating revenue. To ascertain which of these alternative predictions ultimately holds true, I ask my final research question:

RQ_6: How does the proportion of farmers moderate the inside sales–firm revenue relationship?

Methodology

Data

Attempting to answer my research questions requires a highly unique dataset. Specifically, the dataset needs to provide information on the structure of a large variety of firms' sales organizations, including their proportion of inside salespeople, proportion of farmers, geographic dispersion of the sales force, and sales managers' average span of control within each organization. I am not aware of any publicly available repository that would offer this level of detail. Perhaps for this reason, prior research has not been able to tackle these research questions.

Fortunately, I was able to obtain access to an exclusive proprietary data source that fulfills this requirement, enabling me to be the first to objectively assess the inside sales–firm revenue relationship. This dataset comes from one of the largest providers of software for sales performance management. For each firm served, this software provider diligently tracks each salesperson as to whether they are active in an inside or outside sales role and whether they are a farmer or a hunter. The company also tracks each salesperson's location and the hierarchical structure of the sales force.

I collaborated with the firm's data science team to generate the variables required for my analysis. For the variables proportion of inside salespeople and proportion of farmers, the data

science team provided me with the average annual percentage of inside salespeople and farmers within each customer firm for the period of 2016 to 2019. Following the literature, for the variable geographic dispersion, I worked closely with the data science team to calculate the average distance of salespeople from each firm's headquarters in each year (Kafouros et al. 2018). For the variable span of control, the data science team computed the average number of salespeople per sales manager in each firm for each year (Wiseman et al. 2022).

Next, I needed to procure information on each firm's revenue. I used COMPUSTAT to collect revenue data for public companies. For private companies, I used PrivCo (Cao et al. 2023; Zhou et al. 2022) as well as available annual reports. I also used COMPUSTAT to compute the competitive intensity of the industries represented in my dataset. I operationalized competitive intensity as the reciprocal of the Herfindahl–Hirschman index (Lee et al. 2015), that is, the sum of squared shares in the industry at the four-digit SIC level.

Then, to collect the variable product complexity, following established and validated practice, I matched each firm to the Massachusetts Institute of Technology's Observatory of Economic Complexity product complexity index (Cheong, Hoffmann, and Zurbruegg 2021; Hausmann 2013). Lastly, I searched the web to collect data on each firm's age, which was measured as the number of years since the establishment time of a firm (Srinivasan 2006). This procedure resulted in a panel dataset spanning 194 firms with over 85,000 salespeople from the year 2016 to the year 2019. Table 3.4 provides the definitions of the key variables and Table 3.5 provides summary statistics for the variables.

Model Specification

I specify a panel data two-way fixed effect regression model to answer my research questions. My model specification offers three key benefits. First, in addition to firm and

industry-specific covariates, I account for any unobservable firm-specific heterogeneity by applying a fixed-effects model at the firm level. Second, I account for time trends by adding year fixed effects. Third, to curb possible biases of error heteroskedasticity and within-cluster (firm) correlation, standard errors are clustered at the firm level (Cameron and Miller 2015; Wooldridge 2010). The following equation shows the resulting model:

$$
\begin{aligned}
&\log(\text{Revenue}_{ft}) = \\
&+ \beta_1 \text{Proportion of inside salespeople}_{ft} + \beta_2 \text{Product complexity}_{ft} \\
&+ \beta_3 \log(\text{Competitive intensity})_{ft} + \beta_4 \log(\text{Firm age})_{ft} \\
&+ \beta_5 \log(\text{Span of control})_{ft} + \beta_6 \log(\text{Geographic dispersion})_{ft} + \beta_7 \text{Proportion of farmers}_{ft} \\
&+ \beta_8 \text{Proportion of inside salespeople}_{ft} * \text{Product complexity}_{ft} \\
&+ \beta_9 \text{Proportion of inside salespeople}_{ft} * \log(\text{Competitive intensity})_{ft} \\
&+ \beta_{10} \text{Proportion of inside salespeople}_{ft} * \log(\text{Firm age})_{ft} \\
&+ \beta_{11} \text{Proportion of inside salespeople}_{ft} * \log(\text{Span of control})_{ft} \\
&+ \beta_{12} \text{Proportion of inside salespeople}_{ft} * \log(\text{Geographic dispersion})_{ft} \\
&+ \beta_{13} \text{Proportion of inside salespeople}_{ft} * \text{Proportion of farmers}_{ft} \\
&+ \beta_{14} \text{Sales force size}_{ft} + \beta_{15} \text{Industry growth}_{ft} \\
&+ \alpha_f + \gamma_t + \varepsilon_{ft}
\end{aligned}
$$

where subscripts f and t denote firm and time, respectively, α_f denotes the time-invariant firm's unobservable fixed effects, and γ_t denotes year fixed effects. All independent variables are standardized. The results are presented in Table 3.6. The interactions are plotted in Figure 3.2.[3]

Results

First and foremost, my analysis reveals no significant relationship between the proportion of inside sales and firm revenue on average (see Table 3.6). This highlights the importance of adopting a contingency perspective to ascertain the conditions under which a high proportion of inside sales can result in greater firm revenue. A likelihood ratio test comparing the nested main

[3] The quadratic effects were also tested for each of the interactions and were not found to be significant.

effects model to the model with interactions reveals that the model with interaction significantly improves model fit (see Table 3.6: LR chi2(6) = 70.74, Prob > chi2 = 0.0000).

In response to my first research question, I find that product complexity negatively moderates the relationship between the proportion of inside sales and firm revenue ($\beta_2 = -.06, p \leq .01$). This supports my reasoning that complex products require a deeper understanding of the customer's specific context and to achieve this level of understanding, firms must place greater emphasis on outside salespeople who can visit customers on-site, observe their operations firsthand, and gain insights into each customer's distinctive needs and challenges.

Next, I find the inside sales–firm revenue relationship is negatively moderated by the competitive intensity of a firm's industry ($\beta_3 = -.08, p \leq .05$), answering my second research question. This finding aligns with my argument that salespeople in industries with high competitive intensity face pressure to set themselves apart from their competition by forging close personal connections with customers through face-to-face interactions. To achieve this, having an outside sales force might become imperative to gain a significant edge in establishing relationships.

For my third research question, I find that a firm's age positively moderates the relationship between the proportion of inside sales and firm revenue ($\beta_4 = .17, p \leq .05$). This suggests that while an initial investment in outside sales can lay a strong foundation for a company, as the firm's reputation grows, inside sales becomes increasingly viable and effective in driving sales revenue.

In response to my fourth research question, I find that span of control negatively moderates the relationship between a firm's proportion of inside sales and revenue ($\beta_5 =$

$-.06, p \leq .01$). This finding supports the reasoning that implementing a narrower span of control enables inside salespeople to effectively deal with higher rejection rates and strictly adhere to rigorous processes, thereby increasing sales revenue.

In addressing my fifth research question, I find the inside sales–firm revenue relationship is positively moderated by a firm's geographic dispersion ($\beta_6 = .10, p \leq .01$), which underscores the effectiveness of utilizing inside sales as a strategic approach for highly dispersed organizations. Lastly, in response to my sixth research question, I find that the inside sales–firm revenue relationship is positively moderated by a firm's proportion of farmers ($\beta_7 = .04, p \leq .01$). These results corroborate the argument that firms with a higher proportion of inside salespeople are more likely to meet their existing customers' accessibility expectations, allowing farmers to generate higher revenue.

Correcting for Endogeneity

For the two-way fixed-effects estimation, the identifying assumption is that, conditional on covariates and firm and year fixed effects, the choice of a firm's proportion of inside salespeople is uncorrelated with unobserved variables. In other words, there is no unobserved variable that varies at both the firm and time level that is correlated with a firm's decision on the proportion of inside salespeople. Formally:

$$\mathrm{E}[\mathrm{Revenue}_{\mathrm{ft}} | \alpha_{\mathrm{f}}, \gamma_{\mathrm{t}}, \mathrm{X}_{\mathrm{ft}}, \text{unobserved variables}_{\mathrm{ft}}] = \mathrm{E}[\mathrm{Revenue}_{\mathrm{ft}} | \alpha_{\mathrm{f}}, \gamma_{\mathrm{t}}, \mathrm{X}_{\mathrm{ft}}],$$

where the omitted variables are time-invariant and unobserved firm characteristics α_f, unobserved time shocks γ_t, along with variables X_{ft} determine a firm's revenue. However, one might argue that there might be time-variant variables, such as idiosyncratic managerial decisions, that can be correlated with a firm's proportion of inside salespeople and revenue. As a result, I also conduct a robustness check using an instrumental variable approach.

I use the proportion of inside salespeople of non-competing peer firms in the respective industry (logged) as an instrument for the focal firm's proportion of inside salespeople. Peer instruments have recently gained popularity and have been used in several research articles (Lim, Tuli, and Grewal 2020; Shi, Sridhar, and Grewal 2023; Singh, Sen, and Borle 2022; Whitler, Krause, and Lehmann 2018). To evaluate the theoretical validity of the proposed instrument, I assess my instrument's relevance and exclusion restriction (Germann, Ebbes, and Grewal 2015; Shi, Grewal, and Sridhar 2021).

Instrument relevance implies that the proposed instrument conceptually and empirically correlates with the endogenous variable. In my setting, this translates to the effect of a firm's peers' proportion of inside salespeople on the focal firm's proportion of inside salespeople. Theoretically, a firm's decision on the proportion of inside salespeople should be a function of what non-competing peers are doing, as firms commonly make managerial decisions using benchmarking (Vorhies and Morgan 2005). For example, among others, research has shown peer effects among firms in corporate governance (Foroughi et al. 2021), social responsibility (Chao, Liang, and Zhan 2019), capital structure (Fairhurst and Nam 2020), corporate philanthropy (Marquis and Tilcsik 2016), adoption of C-level positions (Gupta, Fung, and Murphy 2021), and financial policy (Leary and Roberts 2014). As a result, I have reason to believe that the proportion of non-competing peers' inside salespeople should impact the proportion of inside salespeople within the focal firm. To provide empirical evidence, I also test for instrument relevance in my data. Table 3.7 shows the results of this empirical test using a full set of firm and yearly fixed effects. The effect of peers' proportion of inside salespeople on the focal firm's proportion of inside salespeople is positive and significant.

The exclusion restriction implies that the suggested instrument does not correlate with the omitted variables that are a component of the error term (Wooldridge 2010, 2015). Due to time shocks, there might be a relationship between peers' proportion of inside salespeople and the focal firm's revenue. For example, peers might increase the proportion of their inside salespeople due to macroeconomic conditions in certain years. Due to the same macroeconomic conditions, the focal firm may have a higher or lower revenue. However, I empirically control for firm and year fixed effects in my model. As a result, I argue that there is little reason to believe that the decision of the peer firms about the proportion of their inside sales force would correlate with the focal firm's proportion of inside salespeople after controlling for year fixed effects.

Against this backdrop, I extracted the residuals from the first stage model and added them as an additional control to my estimation of firm revenue. The residual effectively controls for endogeneity both in the proportion of inside salespeople and interaction terms (Ebbes, Papies, and Van Heerde 2016; Wooldridge 2015). As illustrated in Table 3.8, the new regression fully replicates the results of my main analysis. Thus, my results do not seem to be unduly influenced by endogeneity.

Discussion

Theoretical Implications

My study makes three contributions to the marketing academy. First, I contribute new knowledge to the emerging inside sales theory—that is, to the body of academic sales literature examining phenomena related to inside sales organizations (Shi, Sridhar, and Grewal 2023; Sleep et al. 2020; Thaichon et al. 2018). To date, inside sales theory mostly comprises knowledge on two specific phenomena: (1) the relationship between technology and inside sales and how this relates to the ongoing evolution and transition to inside sales (e.g., Conde,

Prybutok, and Sumlin 2021; Ohiomah et al. 2019; Rapp et al. 2012), and (2) the distinctive advantages and disadvantages associated with an inside sales role (e.g., Ramos, Claro, and Germiniano 2023; Sleep et al. 2020; Thaichon et al. 2018). While this prior knowledge is undoubtedly important for sales academics seeking to investigate the effectiveness of existing inside sales organizations, my study answers the grand question of in which contexts deploying an inside sales force is advisable to begin with—a question of utmost importance to academia and practice (Shi, Sridhar, and Grewal 2023; Sleep et al. 2020; Thaichon et al. 2018).

Specifically, I find that the effect of the proportion of inside salespeople on revenue hinges on (1) the firm's product complexity, (2) the competitive intensity in the firm's industry, (3) the firm's age, (4) the firm's managers' span of control, (5) the firm's geographic dispersion, and (6) the proportion of farmers in the firm's sales force. These factors are novel to inside sales theory, allowing me to provide a unique and important contribution (Chaker et al. 2022; Conde and Prybutok 2021; Conde, Prybutok, and Thompson 2021; Gessner and Scott 2009; Homburg, Morguet, and Hohenberg 2021; Ohiomah et al. 2019; Rapp et al. 2012; Shi, Sridhar, and Grewal 2023; Sleep et al. 2020; Thaichon et al. 2018).

My extension to inside sales theory offers a multitude of opportunities for future research. For example, note that my study examined the inside sales–firm revenue relationship at the firm level, assuming a macro perspective (Blocker et al. 2012; Cron et al. 2014). It would be interesting to examine how the effects unearthed by my study manifest at the individual salesperson level. More specifically, how effective are individual inside and outside salespeople at generating revenue contingent on the macro-level moderating factors outlined above—and how does this effectiveness arise? For example, do the moderating factors identified in this study determine how individual inside salespeople use digital tools (Chaker et al. 2022; Conde and

Prybutok 2021; Gessner and Scott 2009; Ohiomah et al. 2019; Rapp et al. 2012) or collaborate with outside salespeople (Shi, Sridhar, and Grewal 2023)? While clearly beyond the scope of my study, I encourage future research to dive into these interesting questions.

Second, this study represents a significant advancement to contingency theory, which suggests that the effects of a firm's structural choices on its performance are moderated by characteristics of both the firm and the industry in which the firm operates (De Luca and Atuahene-Gima 2007; Zeithaml, Varadarajan, and Zeithaml 1988). While prior literature has used contingency theory to explain consequences of various firm decisions, such as marketing organizational structures (Olson, Slater, and Hult 2005), customer participation (Auh et al. 2019), and operations management practices (Sousa and Voss 2008), this study breaks ground by being the first to test and apply the theory explicitly to the domain of inside sales structures. By doing so, I significantly broaden the applicability of contingency theory, extending its reach to encompass novel, real-world phenomena—an expansion that is widely acknowledged as a vital contribution to the academic marketing literature (Lynch et al. 2012). Furthermore, this research distinguishes itself through the empirical validation of six moderating factors as essential contingencies. Future studies may regard these factors as candidates potentially moderating other structural choices by firms. Therefore, this study doesn't just contribute to the understanding of inside sales structures; it offers a template for contingency theorists across various disciplines, thereby amplifying its impact and utility in both academic and practical contexts.

Third, my study responds to the repeated calls for macro-level research in the sales area (Blocker et al. 2012; Cron 2017; Cron et al. 2014). A review of sales and sales management studies published between 1982 and 2008 revealed that the individual salesperson was the unit of analysis in the vast majority of sales performance studies (Verbeke, Dietz, and Verwaal 2011).

Recent examples of such studies examined buyer–seller interactions (Ahearne et al. 2022; Cron et al. 2021; Pourmasoudi et al. 2022), buyer–seller negotiations (Atefi et al. 2020; Cardy et al. 2023; Kassemeier et al. 2022), and effects of control systems on individual salespeople (Habel, Alavi, and Linsenmayer 2021a; Kanuri et al. 2022). While studies have called on the field to complement such research through a macro-level perspective (Blocker et al. 2012; Cron et al. 2014), according to the latest available statistics, less than five percent of sales studies examine macro-level phenomena (Cron 2017).

One reason for the dearth of macro-level sales research is that collecting pertinent data is difficult. While outcome variables (e.g., firm revenue) are easily accessible through public databases (e.g., COMPUSTAT, PrivCo), sales structure-related variables are much harder to extract. For example, I am not aware of any public source of information that would allow researchers to accurately quantify firms' proportion of inside salespeople. I was fortunate to have access to this information through a proprietary dataset—quite possibly the only dataset in the United States offering this level of detail on firm-level inside sales structures. I am excited about the opportunity to share my insights from this unique dataset with the academic community to enhance sales theory.

Managerial Implications

The results of this research carry considerable practical significance as they offer valuable insights and recommendations that can directly influence the way managers design and structure their sales force. This is particularly noteworthy because, at present, there is a lack of studies that provide guidance to sales managers when it comes to making informed decisions about deploying an inside sales force. By addressing this knowledge gap, my study fills a crucial

void in the understanding of how sales forces should be organized, specifically with regard to the utilization of inside sales.

First, it is important to note that I did not find a significant positive relationship between the proportion of inside salespeople and firm revenue on average. While inside sales can be beneficial for some firms, it is not a universally appropriate design for all organizations. Therefore, firms should resist following calls out of industry such as "Field Sales is DEAD" (Swanston 2021). Despite the fact that these calls may be well-intentioned, given the emphasis on inside sales in numerous industries, my findings indicate that they are grossly overgeneralized.

Instead, firms require a nuanced approach when considering the transition to or the deployment of an inside sales force. Therefore, second, my research provides managers with invaluable insights to make well-informed decisions regarding whether the transition to inside sales would align seamlessly with their organization's unique characteristics. By providing a comprehensive understanding of the factors influencing the effectiveness of inside sales, I equip managers with the necessary tools to assess the suitability of this transition for their specific context. For example, a firm that sells simple products or has extensive experience is more likely to benefit from ramping up their inside sales force. However, the decision to transition to inside sales is not universally advantageous and demands astute consideration for firms selling complex products or navigating cutthroat industries.

Third, I provide firms who have already made the transition to inside sales with guidance on how they can improve the performance of their inside sales force. More specifically, managers can benefit from limiting their span of control and thus working more closely with inside salespeople. This intensified manager–inside sales team dynamic fosters a culture of

continuous improvement in which managers are able to provide timely feedback and help inside salespeople cope with high rejection rates and thereby generate more sales revenue.

Limitation and Avenues for Further Research

Two features of my dataset potentially pose limitations to the generalizability of my findings and thereby offer potential avenues for future studies. First, all firms in my dataset are based in the United States. It is thus questionable to what extent my results generalize to other countries and cultures. For example, compared to the United States, some Asian and Latin-American cultures may place greater value on personal relationships and thus face-to-face salesperson–customer interactions (Gao, Ballantyne, and Knight 2010; Hewett 2006). Consequently, it may well be that inside sales structures are less likely to yield positive firm revenue in these countries under my investigated contingencies. I encourage future research to examine to what extent my effects are country specific.

Second, while I use a cross-industry sample of companies, my results may not generalize to companies situated in industries that are not represented in my sample. For example, my dataset does not comprise professional services firms (e.g., top management consulting). In this industry, inside sales is rather uncommon as sales is frequently performed by managing partners using face-to-face interactions with customers (Plötner, Habel, and Schmitz 2023). Thus, ramping up inside sales organizations in professional service firms may not necessarily yield changes in revenue in line with the predictions from my model. I thus encourage future research to replicate my model in industries not represented in my data.

Additionally, an interesting finding that was not addressed in this study but poses a fascinating subject for future research is the negative relationship between product complexity and firm revenue. Notably, this was the only moderating variable for which the main effect

remained statistically significant upon the inclusion of an interaction term in the model. Future research could explore the unique dynamics between product complexity and firm revenue, setting it apart from other variables considered in this study.

Furthermore, while the present study employs contingency theory as a foundational framework to examine the conditions under which inside sales contributes positively to organizational revenue, future research could extend these findings by incorporating alternative theoretical perspectives. Specifically, Agency Theory offers a promising lens through which to interpret these relationships. Central to Agency Theory is the principle of aligning the interests of agents—in this context, inside salespeople—with those of principals, such as firm owners or shareholders. Subsequent inquiries could delve into the intricacies of compensation structures, performance metrics, and incentive systems for both inside and outside sales teams to determine their effectiveness in driving firm revenue. Understanding how the incentives of inside salespeople deviate from or align with those of their outside counterparts could yield valuable insights into the mechanisms that influence revenue generation.

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TABLES

Table 3.1. Literature Review on Inside Sales Research.

Reference	Method	Sample	Number of Firms Studied	Macro-Level	Quantitative	Objective	Findings
Chaker et al. (2022)	Grounded theory using qualitative interviews	25 salespeople and 8 sales leaders	Unknown	—	—	—	• Inside sales strategic social media use leads to higher levels of customer digital engagement and, ultimately, higher inside salesperson performance
Conde and Prybutok (2021)	PLS model using objective field data	166 salespeople	1	—	✓	✓	• Sales activities are positively correlated with inside salesperson performance and inside salesperson tenure
Conde, Prybutok, and Sumlin (2021)	Netnography	192 salespeople	Unknown	—	—	—	• Inside salespeople use online technology to seek information outside their company to gain knowledge to improve sales activities and maximize sales outcomes
Conde, Prybutok, and Thompson (2021)	PLS model using survey data	184 salespeople	Unknown	—	✓	—	• Inside sales managers use operational outcome controls to drive inside salesperson performance • Inside salespeople experience lower autonomous motivation and lower job satisfaction due to reliance on operational outcome controls
Gessner and Scott (2009)	Conceptual	—	0	—	—	—	• Inside salespeople can utilize business intelligence tools to reduce the disadvantages associated with weaker rapport experienced in inside sales
Homburg, Morguet, and Hohenberg (2021)	Social network analysis using survey data	336 salespeople	1	—	✓	—	• The effects of various incentives in the inside sales unit context differ from those in other contexts
Rapp et al. (2012)	SEM using survey data	350 sales leaders	156	✓	✓	—	• The use of eLearning and technological tools leads to positive outcomes for both inside and outside sales roles
Thaichon et al. (2018)	Conceptual	—	0	—	—	—	• Sales structures have transitioned from outside sales to structures that include inside sales and online channels providing unique sales performance benefits in modern selling environments
Ohiomah et al. (2019)	PLS model using survey data	108 salespeople	Unknown	—	✓	—	• Lead management systems can curb the challenges faced by inside salespeople and increase inside salesperson performance
Ramos, Claro, and Germiniano (2023)	Two-way fixed effects regression	Unknown	1	—	✓	✓	• Inside sales increase value creation when used independently however using inside sales together with outside sales or distributors in hybrid structures decreases performance
Shi, Sridhar, and Grewal (2023)	Two-way fixed effects regression	34,099 customer-year observations	1	—	✓	✓	• Inside sales–outside sales dyad's collaboration experience and product knowledge diversity positively affect sales outcomes
Sleep et al. (2020)	Qualitative interviews	39 sales leaders and salespeople	36	—	—	—	• Significant differences exist between inside and outside salespeople in terms of job demands and resources
Our study	Two-way fixed effects regression, control function	85,000 salespeople	194	✓	✓	✓	• The effect of a firm's proportion of inside salespeople on its sales revenue is highly dependent on characteristics of the firm and the market in which the firm operates

Table 3.2. Inside vs. Outside Sales (based on Sleep et al. 2020).

	Inside Sales	Outside Sales
Definition	Professional sales conducted remotely without face-to-face interaction with customers	Professional sales conducted face-to-face with customers
Communication with Customers	Voice, video, and text	Voice and body language
Typical Role Responsibilities	Relationship building, relationship management, and after-sale service	Relationship building, relationship management, and after-sale service
Job Autonomy	Less flexibility – restricted to stringent processes	More flexibility
Sales Force Control System	Behavior based and outcome based	Mostly outcome based
Rejection Rate	Higher	Lower
Customer Contact Time	More	Less – due to significant time spent traveling to meet face-to-face with customers

Table 3.3. Participants in Preliminary Interviews.

Name	Position	Age (Years)	Gender	Experience (Years)	Firm Revenue (Annual)	Number of Employees	Industry
Bill	Executive Director	50-60	Male	30	$500 million	25	Business Services
Bret	Regional Director	50-60	Male	30	$80 billion	300	Financial Services
Carl	President	50-60	Male	33	$90 million	250	Home Furnishings
Chelsea	Global Director of Business Development	30-40	Female	10	$5 billion	12,000	Construction
Christine	Chief Sales Officer	30-40	Female	15	$40 million	150	Electronic Equipment
Cindy	General Manager	30-40	Female	17	$60 billion	700,000	Software
Edward	Vice President of Global Marketing	50-60	Male	30	$200 billion	700	Software
Fred	Vice President of Sales	40-50	Male	18	$2 billion	20,000	Automotive
Jared	Vice President of Sales	40-50	Male	26	$130 billion	550,000	Communications
Maddie	Vice President of Marketing	30-40	Female	10	$15 billion	44,000	Industrial Manufacturing

Richard	Director of Business Development	20-30	Male	9	$2.5 million	20	Oil and Gas
Sabrina	Senior Manager	50-60	Female	26	$60 billion	700,000	Strategy & Consulting

Table 3.4. Definition of Key Variables.

Variable	**Role**	**Definition**	**Sources**
Revenue	Dependent variable	Annual revenue in USD	COMPUSTAT, PrivCo, Annual Reports
Proportion of inside salespeople	Independent variable	Percentage of inside salespeople in the sales force	Propriety data
Product complexity	Moderating variable	Product complexity index	MIT's Observatory of Economic Complexity
Competitive intensity	Moderating variable	Reciprocal of the Herfindahl–Hirschman index	COMPUSTAT
Firm age	Moderating variable	Age of the firm in years	Web search
Span of control	Moderating variable	Average number of salespeople directly reporting to a manager	Propriety data
Geographic dispersion	Moderating variable	Average distance of each salesperson to headquarters in miles	Propriety data
Proportion of farmers	Moderating variable	Percentage of salespeople with farming roles in the sales force	Propriety data
Sales force size	Control variable	Total number of salespeople	Propriety data
Industry growth	Control variable	Year-over-year percentage change in total industry revenues of firms in the same four-digit SIC code	COMPUSTAT

Table 3.5. Descriptive Statistics and Correlations.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. Revenue	3,115M	13,540M	1									
2. Proportion of inside salespeople	.27	.23	-.14	1								
3. Product complexity	.20	.42	.11	-.18	1							
4. Competitive intensity	3,712	2,457	-.01	-.04	-.02	1						
5. Firm age	32	36	.19	-.19	.14	.08	1					
6. Span of control	10.5	11.5	-.04	-.11	-.03	.07	-.13	1				
7. Geographic dispersion	1,948	1,250	-.04	.08	-.07	-.08	-.11	-.06	1			
8. Proportion of farmers	.92	.12	.11	-.45	.18	.07	.21	0	-.03	1		
9. Industry growth	10	59	.01	-.13	.05	-.14	-.05	.12	.16	.06	1	
10. Sales force size	528	740	-.01	-.09	-.01	.09	0	.01	-.03	.02	-.01	1

Table 3.6. Regression Results.

	DV: Revenue			
	Coefficient	(Robust std. err.)	Coefficient	(Robust std. err.)
Proportion of inside salespeople	.08	.08	.04	.06
Product complexity	-.05	.03	-.06*	.03
Competitive intensity	-.02	.08	-.00	.07
Firm age	.64	.36	.60	.33
Span of control	-.01	.03	-.02	.02
Geographic dispersion	-.25**	.09	-.15	.09
Proportion of farmers	.01	.05	-.01	.03
Proportion of inside salespeople * Product complexity			-.07**	.03
Proportion of inside salespeople * Competitive intensity			-.08*	.04
Proportion of inside salespeople * Firm age			.17*	.08
Proportion of inside salespeople * Span of control			-.06**	.02
Proportion of inside salespeople * Geographic dispersion			.10**	.04
Proportion of inside salespeople * Proportion of farmers			.04**	.02
Sales force size	.05	.07	.07	.06
Industry growth	-.01	.05	-.00	.01
Constant	20.08**	.04	20.11**	.04
Firm fixed effects	✓		✓	
Year fixed effects	✓		✓	
Number of observations	660		660	
LR test (main v interaction)			LR chi2(6) = 70.74 Prob > chi2 = 0.0000	
R-squared	.19		.51	

** $p \leq .05$, ** $p \leq .01$; Standard errors are clustered at the firm level.*

Table 3.7. Peer Influence on Firm's Proportion of Inside Salespeople (Control Function Approach: First Stage).

	DV: Proportion of inside salespeople	
	Coefficient	(Robust std. err.)
Peers' proportion of inside salespeople	.21*	.11
Product complexity	.03	.05
Competitive intensity	-.03	.08
Firm age	-.12	.13
Span of control	-.10*	.05
Geographic dispersion	.36**	.14
Proportion of farmers	-.16**	.06
Sales force size	.03	.05
Industry growth	-.01	.01
Constant	.36*	.15
Firm fixed effects	✓	
Year fixed effects	✓	
Number of observations	558	
R-squared	.17	

** $p \leq .05$, **$p \leq .01$; Standard errors are clustered at the firm level.*

Table 3.8. Regression Results (Control Function Approach: Second Stage).

	DV: Revenue	
	Coefficient	(Robust std. err.)
Proportion of inside salespeople	-0.08	0.20
Product complexity	-0.03	0.02
Competitive intensity	-0.05	0.05
Firm age	0.33	0.20
Span of control	-0.02	0.03
Geographic dispersion	-0.03	0.10
Proportion of farmers	-0.04	0.04
Proportion of inside salespeople * Product complexity	-05*	.02
Proportion of inside salespeople * Competitive intensity	-.05*	.02
Proportion of inside salespeople * Firm age	.14**	.05
Proportion of inside salespeople * Span of control	-.03*	.01
Proportion of inside salespeople * Geographic dispersion	.07*	.03
Proportion of inside salespeople * Proportion of farmers	.03*	.01
Sales force size	0.05	0.04
Industry growth	-0.00	0.00
First stage residuals	.12	.20
Constant	-0.08	0.05
Firm fixed effects	✓	
Year fixed effects	✓	
Number of observations	558	
R-squared	.55	

** $p \leq .05$, **$p \leq .01$; Standard errors are clustered at the firm level.*

FIGURES

Figure 3.1. Conceptual Framework.

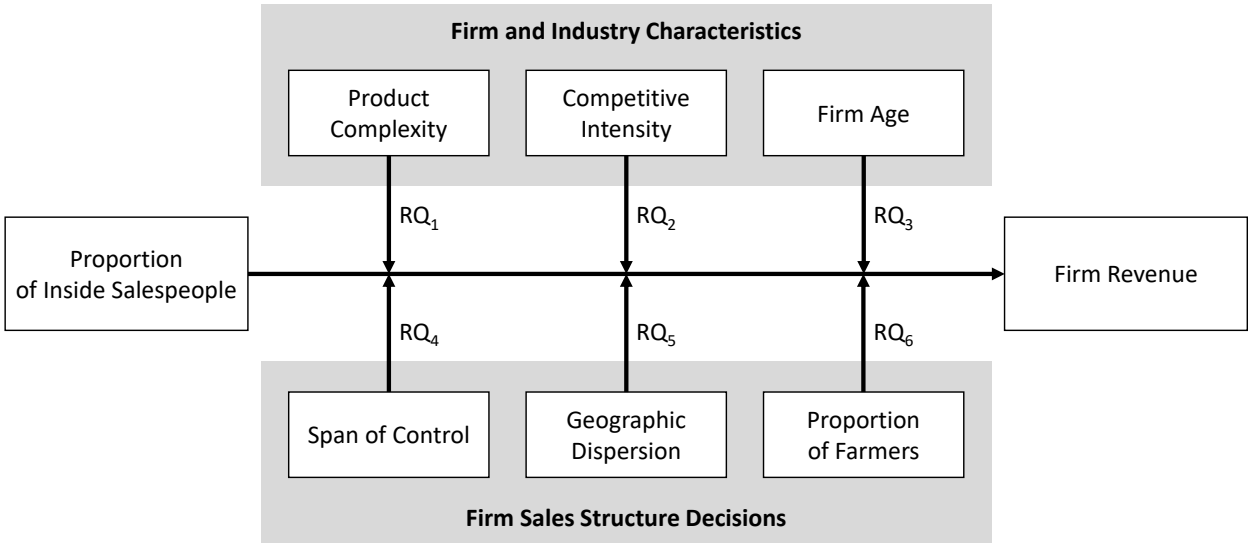
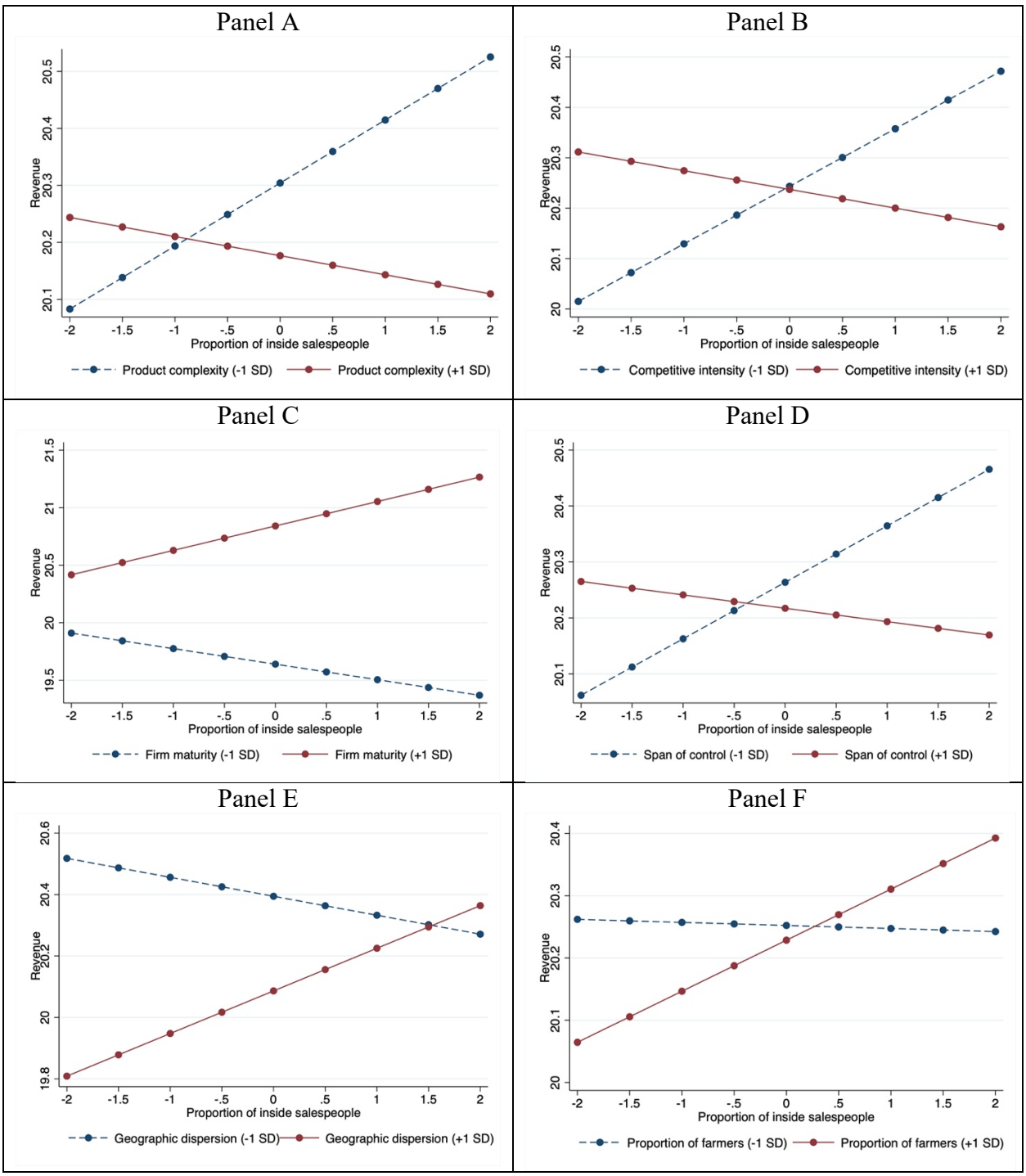


Figure 3.2. Interaction Plots.



CHAPTER 4

CONCLUSION

Overall, in this dissertation, I attempt to uncover how organizations can best manage and structure their sales forces to achieve optimal business outcomes. In my first essay, I examine the differential effects of performance rankings across three information conditions: *limited information* (rankings published with salespeople's performance), *expanded information* (rankings, performance, and salespeople's names), and *full information* (rankings, performance, names, and sales quotas) and find that the limited and expanded information regimes lead to greater improvement in sales performance, with the expanded information regime having the greatest effect on performance improvement. However, I find that the full information regime did not result in a performance improvement compared to the control group, indicating that sharing sales quotas under the full information regime makes comparisons difficult for salespeople and opens doors for self-enhancement tendencies through the justification of unsatisfactory ranking and performance. Moreover, I identify key factors, including a salesperson's variable compensation share, ranking group size, and tenure, that impact the effectiveness of each of the three performance ranking conditions. These findings can be used by sales managers to determine if their particular situation is suitable for using sales performance rankings and, if so, what information they should publish alongside the rankings to maximize their effectiveness.

In my second essay, I examine how the proportion of inside salespeople relative to the total number of salespeople in a firm affects sales revenue. I did not find a significant positive relationship between the proportion of inside salespeople and firm revenue on average, indicating that while inside sales can be advantageous for some firms, it is not a design that is

suitable for all organizations. Instead, firms require a nuanced approach when considering the transition to or the deployment of an inside sales force. Specifically, I find that increasing the proportion of inside salespeople is more likely to increase firm revenue if firms (1) sell less complex products, (2) face lower competitive intensity, (3) are more experienced, (4) exhibit a narrower span of control in their sales force, (5) have a more geographically dispersed sales force, and (6) have a higher proportion of farmers among their sales force. These findings advance inside sales theory and help managers adapt their sales force structure to the characteristics of the market and the firm in which they operate.