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ORIGINAL EMPIRICAL RESEARCH

Chicken or egg? Sequential complementarity among salesforce control mechanisms

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Abstract Firms struggle with salesforce control, particularly as typical piecemeal approaches overlook the nuance that the effect of a control is amplified or muted by a context created by other simultaneously deployed controls. Recent studies showing interactions between *formal* controls caution that control mechanisms must be examined as a portfolio. This study takes the next step in addressing *how* widely-studied formal controls interact with understudied input control and informal control in a salesforce control portfolio. We introduce the idea of sequential complementarity—when deploying a control mechanism enhances marginal returns from increasing a temporally preceding one—within a control portfolio to explain those interactions. We use data from 120 apparel manufacturers and 94 retailers to show that the performance benefits of formal control mechanisms depend on precedence by input control. These effects flip in the presence of informal control. Our unique contribution is theoretically introducing temporality into "holochronic" control theory to explain interactions of formal with informal control mechanisms.

Keywords Control portfolio · Sequential complementarity · Holochronic · Salesforce performance

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Introduction

Developing a "right" control portfolio is the essence of managing salesforce employees. Yet firms continue to struggle with control. Consider the case of Best Buy. In 2013, Best Buy abandoned its eight-year experiment with its outcome-focused control system called "results-only work environment" (employees decide when and where they want to work; they were only accountable for achieving measurable outcomes) that had been touted as the future of work–life balance. Similarly, other companies have recently cancelled their liberal work-from-home programs (Yahoo!) and telecommuting policies (Hewlett-Packard). Why did these popular programs fail despite their apparent benefits for individual autonomy and flexibility? One plausible culprit is the sole focus on a single control mechanism (e.g., outcome control) rather than a *portfolio* of controls. Making employees solely accountable for the outcome sounds reasonable on paper, but in reality sales work involves more than attaining measurable outcomes. This means that a firm needs to deploy a portfolio of control mechanisms rather than a single control mechanism, as a single mechanism cannot address the entire range of employee responsibilities.

Although prior research recognizes that firms often use multiple salesforce control mechanisms together, most studies have adopted a piecemeal approach in studying the effects of individual control mechanisms. The emphasis on individual control mechanisms implicitly overlooks that one control mechanism can reinforce or diminish the effects of others that are combined with it in a control portfolio. Two recent studies by Miao and Evans (2012, 2013)—exceptions in this stream—provide compelling evidence for the need to consider control mechanisms in the context of the others in the same portfolio of controls. These studies are important conceptual advances because they both demonstrate the existence of

interactive effects among formal (outcome, activity, and capability) control mechanisms and offer an explanation for the intervening mechanisms through which they influence salesforce performance (e.g., role ambiguity (Miao and Evans 2012); job stress and job engagement (Miao and Evans 2013)).

This recent support for interactions among formal controls highlights two issues that have not yet received attention. First, firms engage in various degrees of screening and selection of salesforce before they use process control or outcome control. This *ex ante* "input control" of the salesforce, although prevalent in practice, has not been examined together with *ex post* formal controls. Instead, scholars have focused on the interactions between *ex post* formal controls. Therefore, we have a limited understanding of how input control might reinforce or diminish the effects of process control and outcome control, even though Miao and Evans (2013) explicitly recognize the relational nature of salesforce control as a fertile area of future research. We define *input control* as the extent to which a firm emphasizes screening a salesperson's knowledge, skills, and abilities in its salesforce hiring decisions (Snell 1992).

Second, a firm can rely on informal controls in addition to formal controls to induce cooperation from its salesforce (Jaworski et al. 1993). Empirical evidence is mixed, with some studies finding a complementarity (Lazzarini et al. 2004; Li et al. 2010), others substitutive (Gulati 1995; Stump and Heide 1996), and others no relationship between informal and formal control mechanisms. We believe this lack of consensus stems from the absence of a theoretical explanation for the interaction between informal and formal control mechanisms. There is theoretical ambiguity about when informal controls would reinforce or diminish the performance effects of formal controls. This study addresses these two gaps in the salesforce control literature, guided by the following research question: *How does formal control influence salesforce performance in the presence of input control and informal control in a salesforce control portfolio*?

To address this research question, we theoretically develop the notion of *sequential complementarity* in a control portfolio. Sequential complementarity exists between two control mechanisms when deployment of a specific control mechanism enhances marginal returns from increasing a temporally preceding one. This notion highlights the role of time in theorizing on interactions among control mechanisms, following recent calls to explicitly consider the role of time in theory development (e.g., Ancona et al. 2001; Mitchell and James 2001). Studying sequential complementarity in a control portfolio has two theoretical upsides. First, considering the *sequential* dimension of a control portfolio enables us to theoretically connect input control with process control and outcome control. These controls reside on different points in a temporal continuum, as we subsequently explain. The same integrative theoretical thread is also used to theorize the interactive effects of informal controls with formal controls. Second, considering the *complementarity* dimension enables us to theorize when using input control would have a mutually reinforcing or diminishing effect with process control and outcome control. Furthermore, considering the complementarity dimension enables us to explicate when adding an informal control would reinforce or diminish the performance effects of formal controls.

Our overarching theoretical idea is that the effect of a formal control mechanism is tempered by other control mechanisms that either temporally precede it or provide the informal environment into which it is introduced. We develop two specific ideas. First, the performance effects of formal control mechanisms are contingent on sequential complementarity with the preceding input control: process control improves salesforce performance because it has sequential complementarity with input control, whereas outcome control diminishes salesforce performance because it lacks sequential complementarity with input control. Second, building on the first idea, the joint effects of input control and the two formal control pairs (input control–process control and input control–outcome control) vary depending on sequential complementarity with informal control. The negative performance effect of the input control–outcome control pair is mitigated when that pair is matched with informal control because the pair has sequential complementarity with informal control, whereas the positive performance effect of the input control–process control pair is diminished because the pair lacks sequential complementarity with informal control.

The study's distinctive contribution to the salesforce management literature is the use of the notion of sequential complementarity to theoretically unpack the performance consequences of control portfolio configuration. Specifically, the study complements extant research on multiple controls, that of Miao and Evans (2012, 2013) in particular, by (1) expanding the temporal scope of a control portfolio from *ex post* controls to *ex ante* controls, (2) considering informal control beyond just formal controls, and (3) taking a controller as opposed to controlee perspective on control.

Our empirical tests using data from the salesforce of 120 apparel manufacturers and 94 matching retailers show that the performance benefits of formal control mechanisms depends on the extent to which it is preceded by input control. Similarly, the performance effects of two formal control pairs (input control–process control and input control–outcome control) show a more nuanced pattern than previous studies suggest: they flip signs in the presence of informal control, suggesting that only a discriminating choice of possible formal controls improves salesforce performance in the presence of informal control. Subsequent sections of the paper theoretically develop the hypotheses, describe the method and analyses, and discuss the contributions and implications.

Theoretical development and hypotheses

Theoretical background

Control refers to mechanisms used by a controller to encourage controlees (the agents) to act in a manner that furthers the controller's (the principal) interests (Jaworski et al. 1993; Ouchi 1979). In a salesforce management setting, the controller is the firm that employs the salesforce, and the controlee is the salesforce. The firm assembles a *control portfolio* comprised of a variety of formal and informal control mechanisms (see Chenhall 2003 for a review). We summarize the major classification schemes of control mechanisms in Table 1.

Formal controls are written, explicit mechanisms to influence the activities and behaviors of the salesforce to achieve desired outcomes. The two formal control mechanisms are process control and outcome control (Anderson and Oliver 1987). *Process control* regulates the methods and procedures used by the salesforce without regard to their outcomes (Ouchi 1977). *Outcome control* specifies desirable outcomes or goals, with rewards and penalties tied to meeting them (Krafft 1999). In contrast, informal controls are social mechanisms designed to influence the behaviors of the salesforce to achieve desired outcomes. They attempt to influence salesforce behavior using goal congruence, shared values, and norms (Kirsch et al. 2010). Informal control is also referred to as clan control (Ouchi 1979), social control (Jaworski 1988), or norm-based control (Heide and John 1992) that draws on common "expected patterns of behavior" between the firm and its salesforce to influence salesforce behavior (Bello and Gilliland 1997).

Three notable gaps exist in the extant salesforce control literature: inattention to (1) input control, (2) informal control, and (3) their interplay with formal controls. First, prior research on formal controls has examined process and outcome controls (Anderson and Oliver 1987; Jaworski 1988; Ramaswami 1996), which a firm would deploy after organizing and deploying salesforce. However, firms often invest substantial resources in screening, selecting, and training their sales forces before deploying them. Such selection of salesforce employees is temporally and nomologically upstream to other more widely studied formal control mechanisms. This mechanism, input control, has largely been overlooked in prior studies, although Eisenhardt (1985, p. 135) observed that "control can be achieved by minimizing the divergence of preferences among organizational members…This strategy emphasizes people policies such as *selection*, *training*, *and socialization*" (italics added). The silence in the salesforce control studies about input control does not imply its irrelevance; it is often used in salesforce management through such common practices as screening, selection, and training of new salesforce.

Second, formal controls have received far more attention than informal controls. The extant literature is divided about whether informal controls complement or substitute formal controls (Gibbons 1999; Poppo and Zenger 2002; Zenger et al. 2002). While more empirical support has been reported recently for the complementary link between the two (Lazzarini et al. 2004; Li et al. 2010; Ryall and Sampson 2009), the precise meaning of complementarity still remains ambiguous. Beyond the general idea that "each part reinforces every other part" (Park and Zaltman 1987), studies invoke different logics of complementarity, ranging from supplementary effects among formal and informal mechanisms (Lazzarini et al. 2004; Li et al. 2010) to both supplementary and compensatory effects (Poppo and Zenger 2002; Ryall and Sampson 2009).[1] Therefore, the underlying theoretical logic for complementarity between formal and informal controls remains underdeveloped.

Third, control mechanisms are deployed in combination (Anderson and Oliver 1987; Jaworski 1988; Jaworski et al. 1993; Kirsch 1997; Snell 1992). This combination of controls is referred to as a control portfolio. It is plausible that control mechanisms in a portfolio might interact in ways that are mutually reinforcing or diminishing of each other. Yet prior studies have studied them in isolation. The sole exceptions are two recent studies by Miao and Evans (2012, 2013) that were the first to recognize that formal controls interact and that such interactions have consequences that cannot be understood if they are treated in isolation. Their work provides new insights into how interactions between formal controls affects salesforce performance through role ambiguity (Miao and Evans 2012) and job engagement and job stress (Miao and Evans 2013). Building on their first step in studying interactions between formal control mechanisms, we direct our attention to the next logical question of how formal controls interact with input control and informal control.

As a starting point for theorizing *how* formal control interacts with input control and informal control, we draw on recent calls to pay attention to the role of time in theory development (Ancona et al. 2001; Mitchell and James 2001). In a thought-provoking discussion of the role of time in organizational theories, Zaheer et al. (1999) describe theories that are independent of assumptions about the role of time as *holochronic* theories. Holochronicity, in their opinion, represents a simplifying assumption of many theories. However, time often serves as an important yet unspecified boundary condition for theory. They caution that virtually any concept that involves human action must incorporate the notion of time. In this sense, control theory both in its current use and

[1] Supplementary fit relies on one element augmenting the other by pushing in the same direction, while compensatory fit relies on one element pushing in a different direction to make up for the weakness of the other.

Table 1 Major classification schemes of controls

	Ouchi (1979) Eisenhardt (1985)	Jaworski (1988)	Chenhall (2003)	Miao and Evans (2013)
Formal controls				
Input control	Screening	Input control	Personnel control	–
Process control	Behavior control	Process control	Behavior control	Activity control and capability control
Outcome control	Outcome control	Output control	Output and results control	Outcome control
Informal control	Clan control	Social control	Clan control	–

traced back to its roots in Ouchi's work is holochronic because the elements of timing and sequence are absent in it. Our theory development here emphasizes attention to the role of time in the sense that various controls are introduced at different points in time. Therefore, the effect of deploying any formal control is conditioned by whether it is preceded by or in coexistence with a temporally preceding control.

Sequential complementarity between controls

We define *sequential complementarity* as the extent to which deploying a control enhances marginal returns from increasing a temporally preceding control. This concept brings together two interrelated ideas, complementarity and the role of temporal sequencing, building on the notion of time in Ancona et al. (2001) and Mitchell and James (2001). Following Milgrom and Roberts (1995), we define *complementarity* between controls as the extent to which increasing one control mechanism increases the marginal performance returns to increasing another. Consider complementarity between two temporally connected controls (control A→control B). Sequential complementarity exists for control B when its impact on performance is strengthened by the *a priori* control A.

Figure 1 illustrates the temporal order in which the four controls are introduced, building on the implicit description of each in prior control studies. A firm first decides how much input control (e.g., screening or selection of salespeople) to deploy. This is represented as t_0 in Fig. 1. Process control can be deployed and spans throughout the duration of the sales

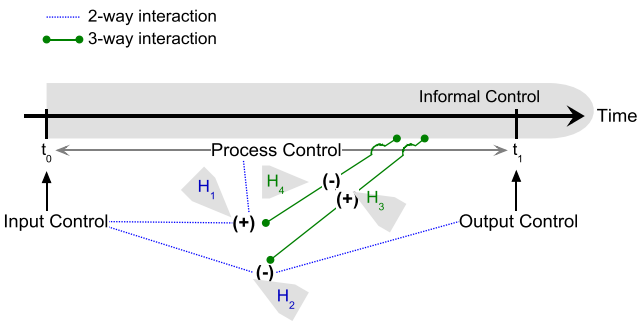

Fig. 1 Sequential complementarity among control mechanisms in a control portfolio

activities (i.e., between t_0 and t_1); outcome control is used to judge the final outcomes delivered by the salesforce (t_1). Informal control provides the backdrop or context within which each formal control operates. It spans the entire range of the Fig. 1's temporal continuum once a firm organizes and deploys its salesforce (i.e., after t_0).

Although our use of sequential complementarity as an integrative conceptual lens is new, some prior studies have implicitly alluded to its premise. For example, Wathne and Heide's (2000) study of opportunism in interfirm relationships emphasized that each control can produce "second-order effects" beyond just mitigating opportunism. Applying that idea to salesforce management, one may suggest that rigorous input control (e.g., selection) of salesforce employees has the second-order effect of signaling high salesforce quality to potential customers. The firm is likely to engage in intensive control over the sales process (i.e., process control) to keep up with the high-quality signal of intensive input control, thereby alluding to the interplay between input control and process control. We use the proposed sequential complementarity framework to first theoretically develop our hypotheses for the interplay of input control (t_0) with two subsequent controls (i.e., process and outcome; after t_0), followed by that between formal controls and informal control. The crux of our logic that is the presence (absence) of sequential complementarity enhances (lowers) salesforce performance.

Sequential complementarity between input control and process control

We propose that sequential complementarity between input control and process control *enhances* salesforce performance. Use of input control ensures screening and selection of competent employees into the salesforce (Cardinal et al. 2004; Jaeger and Baliga 1985). Training and socialization of the salesforce align its goals and values with the firm's. It also signals strong commitment from the firm to its salesforce (a second-order effect) (Wathne and Heide 2000). Process control ensures that a firm's salesforce performs sales tasks as programmed by the firm, thereby following prescribed procedures and processes. It can also help the firm discover and discourage potential shirking (Ouchi 1979). From a salesperson's standpoint, being subject to process control has

the advantage of bearing less performance risk or at least sharing that risk with the firm because the focus of process control is on securing compliance with predefined rules and procedures rather than attaining sales goals (e.g., meeting sales quotas) (Jaworski 1988). On the other hand, a firm's intensive use of process control entails an intrusiveness that can alienate the salesforce by taking away a sense of self-determination (Ramaswami 1996; Sewell and Barker 2006). Given these two counteracting effects of process control, we theorize that its benefits become more salient than its downsides when it is preceded by intensive input control.

When input control of salesforce is low, the salesforce is under acclimated to the firm's values and goals and their personal goals are not closely aligned to the goals of the firm. Salesforce employees under this condition are likely to view intensive process control as intrusive and impinging on their autonomy. They are therefore more likely to engage in "sub-goal pursuit" (March and Simon 1958) instead of following the rules and procedures programmed by the firm, thereby hampering the sales process. On the other hand, when input control of salesforce is high, the salesforce has already been socialized to the firm's values and identifies with the firm's goals and values. The salesforce is more likely to behave in accordance with the firm's goals (i.e., more compliance and less shirking) because greater input control has preempted divergence between their goals and those of the firm (Bergen et al. 1992). The salesforce is then more likely to view the firm's process control as being legitimate (Heide et al. 2007) and to comply with those rules, thereby enabling the firm to achieve greater process control. Greater input control therefore elicits higher marginal return from increasing the use of temporally-subsequent process control. This leads to our first hypothesis.

H1: Greater use of input control strengthens the effect of process control on salesforce performance.

Lack of sequential complementarity between input control and outcome control

We propose that a *lack* of sequential complementarity between input control and outcome control *diminishes* salesforce performance. On one hand, outcome control is simpler to implement than process control and the firm economizes on the cost of programming and monitoring of sales processes (Oliver and Anderson 1995). On the other hand, emphasizing the measurement of sales outcomes alone encourages meeting sales goals even if they require neglect of any unmeasured but necessary tasks (Ramaswami 1996), potentially inducing the sales force's gaming behavior. Given these two counteracting effects of outcome control, we theorize that its downsides become more salient than its benefits when it is preceded by intensive input control.

When input control over the salesforce is low, the efficacy of outcome control is likely to be higher for two reasons. First, a firm using outcome control measures, evaluates, and rewards its salesforce solely based on sales outcomes, which makes intensive input control of the salesforce less necessary and uneconomical. Conversely, the firm can financially justify the costs of implementing outcome control if it has not expended resources in selecting and training its salesforce. Second, in the absence of input control, salesforce employees are not acclimated to the firm and their autonomy is still likely to be higher. Therefore, they are more likely to accept outcome control as a fair and legitimate control mechanism.

In contrast, when input control is high, the efficacy of outcome control is likely to suffer in two ways. The firm's resources invested in intensive input control of its salesforce will be wasted when input control is followed by intensive outcome control. Use of outcome control, which does not need preceding input control, bears measurement costs without realizing commensurate benefits from the temporally preceding input control. Second, salesforce employees selected through intensive input control are more likely to consider themselves as committed employees of the firm. The firm's intensive outcome control (focus on attaining sales goals), following intensive input control (focus on capability assurance), sends inconsistent signals to its salesforce, thereby diluting salesforce identification with the firm. The salesforce is then more likely to pursue personal goals and shirk from any unincentivized, unmeasured but necessary sales tasks. This defies the intent of input control. We therefore expect that greater input control diminishes the marginal returns from increasing outcome control. This leads to our second hypothesis.

H2: Greater use of input control weakens the effect of outcome control on salesforce performance.

Sequential complementarity between informal control and formal controls

While we have focused so far on interactions between formal controls, firms often draw on informal controls *in addition to* formal controls over their salesforce (Bello and Gilliland 1997; Jaworski and MacInnis 1989; Ouchi 1979). We therefore continue to rely on the sequential complementarity logic to expand the previous two-way interactions to three-way interactions that result from adding informal control to the mix. Recall from our sequential complementary framework that informal control provides a contiguous environment within which all other formal control mechanisms operate. Therefore, the degree to which informal control is used can affect the interactions in the preceding hypotheses.

A firm's use of informal control engenders differential sequential complementarity with the two pairs of formal controls we examined above: (1) input control–process control pair (H1) and (2) input control–outcome control pair (H2). We theorize a "flipping effect" of using informal control with those formal control pairs: using greater informal control with the input control–outcome control pair (H2) *increases* sequential complementarity, improving salesforce performance, whereas using greater informal control with the input control–process control pair (H1) *decreases* sequential complementarity, diminishing salesforce performance. The logic builds on the counteracting effects in the two-way interaction previously hypothesized to show how adding informal control to the control portfolio can buffer either the negative or positive aspect of either combination.

Sequential complementarity between informal control and input control–outcome control pair Adding greater informal control compensates for what was missing in the high input control–outcome control pair. Adding informal control generates sequential complementarity with input control–outcome control pair in two ways, which leads to a positive performance effect. First, whereas the firm's investment in input control was being wasted when input control was used in conjunction with high outcome control, adding informal control to the input control–outcome control pair now provides the firm with an opportunity to realize potential benefits of input control (e.g., convergence of goals and values between the firm and its salesforce) and recoup the investment in input control through the sales force's faithful compliance with the informal rules and norms for performing sales tasks. Therefore, despite the lack of formal, process control in this control portfolio, the firm now achieves *de facto* control over the sales process through informal control and control over the sales outcomes through outcome control.

Second, whereas outcome control followed by intensive input control sent an inconsistent signal about the firm's commitment to its salesforce and diluted salesforce identification with the firm, adding informal control to the input control–outcome control pair repairs that inconsistency because input control followed by informal control assures salesforce that the firm and salesforce share common expectations, norms, and values for how to perform sales activities. Salesforce employees under this condition are more likely to accept outcome control as legitimate because the firm and the salesforce share informal norms and values for performing sales activities (i.e., high informal control). High informal control, together with high input control, lessens the burden to attain sales goals regardless of sales processes and, salesforce employees have lesser need to engage in pursuing subgoals or engaging in gaming behavior. We therefore expect that greater informal control increases marginal return from increasing the use of input control–outcome control pair (in H2).

Consider the control portfolio used by Zappos.com that exemplifies tying stringent input control, including offering $2,000 to new hires to quit while going through training, with intensive informal control based on Zappos' ten core values. But what has been under the shadow of high publicity in Zappos' focus on input control and informal control is its attention to attaining outcomes. Zappos emphasizes attaining desired outcomes just as hard. Two out of ten Zappos core values are about achieving measurable outcomes: "Deliver WOW through service" (i.e., a superb customer service goal) and "Do more with less" (i.e., a high productivity goal). This illustrates that it is not just Zappos' focus on input control and informal control, but meshing them with intensive outcome control, that results in desirable salesforce performance. This leads to our third hypothesis.

H3: Greater use of informal control attenuates the lack of sequential complementarity between input control and outcome control.

Lack of sequential complementarity between informal control and input control–process control pair In contrast, we expect an adverse effect of adding greater informal control to the input control–process control pair (in H1). In the presence of input control and process control, adding greater informal control is not complementary with those formal controls. Specifically, this particular configuration of controls carries two limitations: (1) redundancy and potential discrepancy between process control and informal control for the "right" ways to perform sales tasks and (2) the neglect of sales outcomes in the control portfolio. First, salesforce employees under this particular control configuration are simultaneously subjected to more formal rules (through process control) and informal rules (through informal control) for performing sales tasks. The efficacy of informal rules is likely to be higher when the firm does not use formal rules or when sales tasks are nonprogrammable (i.e., it is challenging to standardize sales processes). In contrast, the efficacy of informal rules is likely to suffer if the firm already has well-developed formal rules (i.e., process control). Therefore, while there is little advantage to using both formal and informal rules, using both can potentially send conflicting messages. Therefore, the net value of this control combination for salesforce performance is likely to be negative when

considering the benefits vis-à-vis costs of deploying process control and informal control together.

Second, we previously argued that input control followed by temporally subsequent process control motivates the salesforce to abide by formal rules because they are more likely to view the firm's process control as being legitimate. However, adding informal control to the input control–process control pair is likely to diminish salesforce performance because informal control over the sales process cannot make up for the gap in the input–process control combination because neither informal control nor process control can ensure that sales goals are attained. Thus, informal control lacks sequential complementarity with the joint effect of input control and process control. We therefore expect that greater informal control decreases marginal returns from increasing the use of input control–process control pair (H1). This leads to our final hypothesis.

H4: Greater use of informal control weakens the sequential complementarity between input control and process control.

Methodology

Empirical context and sampling frame

The empirical study was conducted using multi-informant data collected from the apparel industry in South Korea. This industry consists of a large number of small, independent apparel manufacturers. The high spending on apparel shopping and service expectations of South Korean consumers, together with short product life cycle and fickle consumer preferences for fashion apparel (Wathne and Heide 2004), mean hiring, training, and managing salesforce are key managerial concerns of apparel manufacturers.

The key informants were the senior sales/marketing executives at manufacturers' headquarters in charge of supervising salesforce who are dispatched to department stores. They were asked to respond to survey questions regarding control mechanisms being used for managing the salesforce. To test the hypotheses, we randomly selected 200 women's fashion apparel manufacturers out of 496 listed in the *Fashion Brands Yearbook* that offered their products through department store chains (DSCs). We contacted each manufacturer to describe the study and solicit their participation. Twenty-five manufacturers either could not be reached or declined to participate. For the remaining 175 apparel manufacturers, we identified a senior sales/marketing executive as the key informant. Then, we delivered and collected the questionnaires in person, asking each informant to fill out the survey with regard to their sales controls and performance of their salesforce working at the pre assigned store of a DSC. We obtained 120 completed questionnaires, for a response rate of 69%.

Following data collection from the manufacturers, we also collected data from matching retailers (i.e., the DSCs). We matched each of the 120 responses from manufacturer informants with a pre assigned DSC and distributed the retailer questionnaires to the most knowledgeable informant for the two constructs (manufacturer brand reputation and manufacturer flexibility). Based on discussions with industry experts, we determined that the best informants from the retailer side were floor managers of department stores, who supervise the apparel brand being sold by the manufacturer salesforce on their "floor" of the department store. We obtained 94 completed questionnaires, for a response rate of 78%.

Measure development

All constructs were measured at the salesforce team level that is deployed within a pre assigned store of a DSC (i.e., store B of DSC A), consistent with the unit of analysis in our theory development. Measures were drawn from the extant literature where possible and adapted based on in-depth interviews with industry practitioners. To enhance translation equivalence, the English version of the questionnaire was translated into Korean and then back-translated into English by two individuals fluent in both languages. Differences were then reconciled. Before administering the pretest questionnaire, a group of manufacturer sales executives provided comments and suggestions regarding the measures to enhance clarity and appropriateness. After minor changes, the questionnaires were pretested with 20 sales managers of apparel manufacturers. Preliminary analysis including Pearson correlation and measure reliability results indicated psychometric adequacy. Details of the measurement items appear in Appendix A.

The dependent variable, *salesforce performance*, was assessed through an 11-item, formative scale that capture both behavioral and economic outcomes of sales efforts. *Input control* used an eight-item, formative scale that taps into the extent to which a firm emphasizes screening a salesperson's knowledge, skills, and abilities in its salesforce hiring decisions. The items were adapted from Stump and Heide (1996) and Wathne and Heide (2004). *Process control* refers to the extent to which a controller directs salesforce by specifying the rules and procedures to be adopted in performing tasks and was measured via a four-item, reflective scale adapted from Celly and Frazier (1996). *Outcome control* refers to the extent to which a controller directs salesforce by specifying output goals and standards and was measured via three-item, reflective scale adapted from Bello and Gilliland

(1997) and Celly and Frazier (1996). *Informal control* refers to the extent to which a controller resorts to implicit expectations on salesperson behaviors that are at least shared by them. While researchers captured informal control with various types including clan control (Jaworski et al. 1993), professional control (Ramaswami 1996), or norm-based control (Gulati and Puranam 2009), we chose to examine norm-based control to capture informal control because norm-based control is conceptually most proximate to Ouchi's original conceptualization of informal control. In particular, we focus on the norm of information exchange that has been examined in previous studies (Heide and John 1992; Jap and Anderson 2007). For this purpose, we used a three-item, reflective scale.

Control variables To account for rival explanations for salesforce performance, several control variables were included in the study. *Decision control* refers to the extent of decision authority that the manufacturer takes over for sales operations and sales policy decisions at headquarters (i.e., more decision control) versus leaving decision authority with the salesforce (less decision control) and was measured via a seven-item, formative scale, based on Mohr et al. (1996). We also account for the potential influence of a focal manufacturer (i.e., employer) on salesforce performance through two variables: manufacturer brand reputation and manufacturer flexibility. *Manufacturer brand reputation* refers to the positive associations with the brand that increase the appeal of a firm's products (Ghosh and John 1999). The focal manufacturer's brand reputation was measured via a three-item, Likert scale building from Lassar et al. (1995). *Manufacturer flexibility* is defined as the extent to which a focal manufacturer is adaptive to make changes in response to changing market conditions and was measured via a five-item, Likert scale adapted from Wathne and Heide (2004). Note that retailer informants were used to measure manufacturer brand reputation and manufacturer flexibility because manufacturer respondents could be biased towards more positive self ratings of those issues.

Endogeneity of control mechanisms We also used a set of instruments for the purpose of addressing endogeneity of formal controls. Manufacturer power and salesforce power were included to account for the fact that a manufacturer would consider salesforce power and its own power to deploy a formal control. *Salesforce power* was measured via a three-item, reflective scale to assess the extent to which the salesforce is essential for garnering targeted sales performance. *Manufacturer power* was measured via a five-item, reflective scale to assess the extent to which the manufacturer and its brand enjoy customer patronage. *Performance ambiguity* is included to account for the influence of measurability of salesforce performance on control deployment. It is defined as the extent to which it is difficult for a manufacturer to measure and evaluate the performance of its salesforce and was measured from the manufacturer's perspective via a four-item Likert scale consistent with those employed by Stump and Heide (1996). Finally, the extent of *centralization* was also included as an instrument because high centralization is associated with greater use of formal controls.

Measure validation

Table 2 summarizes construct correlations and descriptives. For measure validation, we first examined the measurement items for all reflective scales in terms of their item-to-total correlations. Next, we first performed exploratory factor analysis, followed by a confirmatory factor analysis for reflective scales using LISREL 8.54. The overall fit is reasonable for a complex model (χ^2=817.99, d.f.=427) with a root mean squared error of approximation (RMSEA)=.08, non-normed fit index (NNFI)=.86, and comparative fit index (CFI)=.88. The composite trait reliabilities are greater than or equal to .70, thus meeting the recommended cutoff criteria of .70 and all variance extracted values except that of salesforce power are greater than .50. Given these findings, the measures exhibit internal consistency. All indicators loaded significantly on their latent factors, indicating convergent validity (see Appendix B for details of CFA results). To assess discriminant validity, we compared the average variance extracted (AVE) values for each pair of constructs with the Φ^2 value between them. No Φ^2 is greater than the individual AVE values. These results suggest discriminant validity of the measures (Fornell and Larcker 1981). Checks for key informant bias, nonresponse bias, and common method bias were conducted before model estimation.

Model estimation and endogeneity correction

The proposed model has a potential endogeneity problem because firms are likely to deploy formal controls systematically rather than randomly. We correct for endogeneity bias with Garen's (1984) two-stage econometric technique, which extends Heckman's discrete choice model to continuous dependent variables. In the first stage, we estimate three reduced form "control choice models" to construct endogeneity-correcting ηs for three formal controls (input, process, and outcome), which are included in the subsequent "salesforce performance model" (Eq. 2). Following Nickerson and Hamilton's (2003) guidelines, we use as instrumental variables in Stage 1 the known variables affecting control choice in marketing literature. In the second stage, additional variables that account for rival explanations for salesforce performance are included as control variables.

Table 2 Descriptive statistics and correlations

Constructs[a]	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Salesforce performance	5.90	.80	1											
2. Input control	5.97	.57	.40**	1										
3. Process control	5.21	1.02	.29**	.18*	1									
4. Outcome control	6.24	.68	.16	.28**	.38**	1								
5. Informal control	5.17	1.11	.53**	.35**	.27**	.15**	1							
6. Decision control	5.04	.80	-.20*	-.14	.07	.14	-.17	1						
7. Brand reputation	5.38	.75	-.27**	-.09	-.02	.04	-.21**	.10	1					
8. Manufacturer flexibility	4.66	.69	.05	.01	.01	.06	.07	.02	.13	1				
9. Centralization	5.60	.92	.14	.24**	.28**	.32**	.23**	.35**	-.19*	.06	1			
10. Performance ambiguity	2.85	1.13	-.26**	-.12	-.55**	-.28**	-.33**	-.10	.33**	-.04	-.31**	1		
11. Manufacturer power	5.82	1.15	.19*	.29**	.37**	.18*	.26**	.07	.21*	.01	.19*	-.24**	1	
12. Salesforce power	5.39	.90	.47**	.45**	.18	.23*	.45**	-.13	-.19*	-.03	.17	-.31**	.37**	1

[a] A correlation coefficient greater than .18 is significant at the .05 level; a coefficient greater than .24 is significant at .01

Stage 1: formal control choice models and endogeneity correction ηs In the first stage, three endogenous variables—input control, process control, and outcome control—are estimated and the residuals η_{input}, $\eta_{process}$, and $\eta_{outcome}$ are obtained. We used four variables identified in the prior control literature as predictors of extent of formal controls as the instrumental variables in Stage 1 of our model: centralization, performance ambiguity, salesforce power, and manufacturer power. The models used to estimate the extent of formal controls are in the following equations and the results for Stage 1 are presented in Table 3.

$$\textit{Input control} = \alpha_0 + \alpha_1 * \text{centralization} + \alpha_2 * \text{performance ambiguity} + \alpha_3 * \text{salesforce power} + \alpha_4 * \text{manufacturer power} + \eta_{input} \quad \ldots(1.1)$$

$$\textit{Process control} = \beta_0 + \beta_1 * \text{centralization} + \beta_2 * \text{performance ambiguity} + \beta_3 * \text{salesforce power} + \beta_4 * \text{manufacturer power} + \eta_{process} \quad \ldots(1.2)$$

$$\textit{Outcome control} = \gamma_0 + \gamma_1 * \text{centralization} + \gamma_2 * \text{performance ambiguity} + \gamma_3 * \text{salesforce power} + \gamma_4 * \text{manufacturer power} + \eta_{outcome} \quad \ldots(1.3)$$

The results in Table 3 offer insights on drivers of different types of formal controls. More input control is associated positively with increases in centralization (b=.10, p<.05) and salesforce power (b=.23, p<.001). In contrast, more process control is associated negatively with increase in performance ambiguity of salesforce (b=−.49, p<.001), while it is associated positively with increase in manufacturer power (b=.27, p<.001). More outcome control is associated positively with centralization (b=.17, p<.01), while it is associated negatively with increase in performance ambiguity of salesforce (b=−.11, p<.05).

Stage 2: Salesforce performance model accounting for endogeneity of formal controls The hypothesis tests use a three-step hierarchical WLS (weighted least squares) model in Stage 2, where the control variables, the main effects, and η_{input}, $\eta_{process}$ and $\eta_{outcome}$ from Stage 1 are added to the Model 1, then two-way interaction terms are added to test the first two hypotheses (H1 and H2) in Model 2, and finally three-way interaction terms are added to Model 3 to test the last two hypotheses (H3 and H4). The model used

Table 3 Estimation results from the first step

Formal controls			
Independent variables	Input control	Process control	Outcome control
Constant	5.97 (.05)[c]	5.21 (.08)[c]	6.24 (.06)[c]
Centralization	.10 (.05)[a]	.09 (.08)	.17 (.06)[b]
Performance ambiguity	.05 (.05)	-.49 (.08)[c]	-.11 (.06)[a]
Salesforce power	.23 (.05)[c]	-.09 (.08)	.08 (.06)
Manufacturer power	.07 (.05)	.27 (.08)[c]	.03 (.07)
R^2 (R^2_{adj})	24.9% (22.3%)	37.0% (34.9%)	16.1% (13.1%)

[a]: p<.05; [b]: p<.01; [c]: p<.001 (all one-tailed tests)

to estimate salesforce performance is in Eq. 2, and we used the residual-centering approach (Lance 1988; Ramaswami 1996) to reduce potential multi collinearity among predictors. The results of the second stage are summarized in Table 4; the model was significant in all three steps.

We report the results of WLS estimation as well as those of OLS. OLS estimation of our model is inefficient because of heteroskedasticity caused by the dependence of the second-stage error term on formal control choice (Garen 1984). WLS mitigates the risk of inefficient standard errors affecting significance tests. We report the results of heteroskedasticity tests on Table 4 for this purpose. The results clearly indicate that OLS estimations suffer heteroskedasticity but that heteroskedasticity is being attenuated with WLS estimations. Our field interviews with sales managers and examination of residual plots indicate that input control is a most likely source of heteroskedasticity. Therefore, input control was used as the source variable for WLS and we use WLS estimates for reporting hypotheses test results.

Table 4 Estimation results from the second step (Dependent variable: salesforce performance)

Independent variables	Prediction	Model 1: Baseline model		Model 2: Interaction with input control		Model 3: Interaction of formal and informal controls	
		OLS	WLS	OLS	WLS	OLS	WLS
Constant		5.90 (.06)^{c}	5.93 (.06)^{c}	5.90 (.06)^{c}	5.95 (.05)^{c}	5.98 (.05)^{c}	5.96 (.04)^{c}
Input control (IC)		.52 (.19)^{b†}	.39 (.17)^{a}	.52 (.19)^{b}	.52 (.17)^{b}	-.50 (.31)	.43 (.17)^{b}
Process control (PC)		-.01 (.20)	-.04 (.17)	-.06 (.20)	.11 (.18)	-.02 (.18)	.05 (.18)
Outcome control (OC)		.10 (.37)	.42 (.30)	.20 (.38)	-.20 (.34)	.62 (.34)	.25 (.35)
Informal control (NC)		.25 (.07)^{c}	.20 (.07)^{b}	.23 (.07)^{c}	.17 (.06)^{b}	.10 (.06)	.11 (.06)^{a}
Effects of theoretical interest							
IC X PC	H1: (+)			.11 (.09)	.16 (.08)^{a}	.35 (.09)^{c}	.35 (.10)^{c}
IC X OC	H2: (–)			-.16 (.08)^{a}	-.17 (.07)^{b}	-.38 (.11)^{c}	-.38 (.11)^{c}
(IC X OC) X NC	H3: (+)					.10 (.08)	.14 (.08)^{a}
(IC X PC) X NC	H4: (–)					-.36 (.09)^{c}	-.33 (.09)^{c}
Nonfocal Interaction Terms							
PC XOC				.01 (.09)	.01 (.08)	.04 (.07)	.04 (.07)
IC X NC						.03 (.09)	.02 (.09)
PC X NC						-.08 (.07)	-.09 (.07)
OC X NC						-.06 (.08)	.01 (.07)
IC X PC X OC						.04 (.08)	.05 (.08)
PC X OC X NC						.12 (.07)^{a}	.10 (.07)
Control variables							
Decision control		-.06 (.06)	-.06 (.06)	-.06 (.06)	-.08 (.05)	-.11 (.05)^{b}	-.11 (.05)^{a}
Brand reputation		-.11 (.08)	-.09 (.07)	-.13 (.08)	-.06 (.07)	-.10 (.07)	-.08 (.07)
Manufacturer flexibility		.05 (.06)	.03 (.06)	.05 (.06)	.04 (.05)	.07 (.05)	.07 (.05)
Other model statistics							
ŋ input control		-.72 (.36)^{a}	-.56 (.34)^{a}	-.73 (.36)^{a}	-.73 (.32)^{a}	-.50 (.31)	-64 (.32)^{c}
ŋ process control		.17 (.21)	.16 (.18)	.22 (.21)	.07 (.19)	.09 (.18)	.07 (.19)
ŋ outcome control		-.17 (.55)	-.61 (.45)	-.27 (.55)	.41 (.50)	-.60 (.47)	-.11 (.49)
R^2		44.1%	39.3%	46.4%	45.8%	61.5%	60.2%
R^2 adj (Model F)		38.8% (8.35^{c})	33.6% (6.86^{c})	39.7% (6.87^{c})	38.7% (6.44^{c})	53.0% (7.26^{c})	51.4% (6.87^{c})
R2 (F-change)				2.3% (1.53)	6.5% (3.96^{b})	15.1% (5.15^{c})	14.4% (4.76^{c})
Heteroskedasticity test* (X^2 (1))		22.93 (p=.00)	1.36 (p=.24)	15.94 (p=.00)	.81 (p=.37)	22.75 (p=.00)	2.31 (p=.13)

a: p<.05; b: p<.01; c: p<.001 (all one-tailed tests); †: parameter estimates with standard errors in parentheses.; *: Breusch-Pagan/Cook-Weisberg test for constant variance

$$\textit{Salesforce Performance} = \gamma_0 + \{\gamma_1 * \text{decision control} + \gamma_2 * \text{brand reputation} + \gamma_3 * \text{manufacturer flexibility} + \gamma_4 * \text{informal control} + \gamma_5 * \text{input control} + \gamma_6 * \text{process control} + \gamma_7 * \text{outcome control} + \gamma_8 * \eta_{input} + \gamma_9 * \eta_{process} + \gamma_{10} * \eta_{outcome}\} \quad \ldots(2.1)$$

$$+ \{\gamma_{11} * \text{process control} * \text{outcome control} + \gamma_{12} * \text{input control} * \text{process control} + \gamma_{13} * \text{input control} * \text{outcome control}\} \quad \ldots(2.2)$$

$$+ \{\gamma_{14} * \text{input control} * \text{informal control} + \gamma_{15} * \text{process control} * \text{informal control} + \gamma_{16} * \text{outcome control} * \text{informal control} + \gamma_{17} * \text{input control} * \text{process control} * \text{outcome control} + \gamma_{18} * \text{process control} * \text{outcome control} * \text{informal control} + \gamma_{19} * \text{input control} * \text{process control} * \text{informal control} + \gamma_{20} * \text{input control} * \text{outcome control} * \text{informal control}\} + \varepsilon \quad \ldots(2.3)$$

In Table 4, Models 1 and 2 display the set of two nested models through which we analyzed the level of salesforce performance. Model 1 is the baseline model of main effects and control variables only. For the main effects of focal variables, the coefficients for input control and informal control are positive (b=.39, p<.05 and b=.20, p<.01 respectively), which indicates the higher the input (informal) control, the higher the level of salesforce performance as is perceived by the manufacturer respondents will be. For the potential endogeneity bias, the effect of η_{input} is negative and significant (b=−.56, p<.05) but those of $\eta_{process}$ and $\eta_{outcome}$ are nonsignificant, which suggests that endogeneity bias exists for input control but not for process and outcome controls.

Our first two hypotheses are tested in Model 2. Model 2 includes three two-way interactions of salesforce controls for model specification purpose, although our research focus is on two particular pairs: how input control interacts with process control and outcome control. For the joint effect of input control and process control on salesforce performance, the coefficient is positive (b=.16, p<.05). This result provides support for H1 because the positive interactive effect means process control when preceded by high input control improves salesforce performance. Consistent with H2, the coefficient for the interactive effect of input control and outcome control is negative and significant (b=−.17, p<.01), indicating that high outcome control, when preceded by high input control, hampers salesforce performance. Adding those two-way interaction terms increases the explanatory power (R^2) of the model to .46 from .39 and the R^2 increase is significant (F=3.96, p<.01).

Our last two hypotheses are tested in Model 3. Model 3 displays parameter estimates for the full model including three additional two-way interactions, and four unique three-way interaction effects of salesforce control, although our research focus is on how two particular formal control configurations—(1) input control x process control (H1) and (2) input control x outcome control (H2)—interact with informal control. Hypothesis 3 predicted that the negative interactive effect between input control and outcome control on salesforce performance should be mitigated when more informal control is used together. The coefficient for the joint effect of (input control x outcome control) and informal control is positive and significant (b=.14, p<.05). This result suggests that using more informal control alleviates the substitution effect of outcome control and input control and improves salesforce performance, thereby supporting H3.

In H4 we predicted that the positive interaction between input control and process control (H1) should become weaker when they are aligned with informal control. The joint effect of (input control x process control) and informal control is negative and significant (b=−.33, p<.001). This result supports that using more informal control weakens the complementary effect of process control with input control and hampers salesforce performance, thereby supporting H4. Adding those terms increases the explanatory power (R^2) of the model to .60 from .46 and the R^2 increase is significant (F=4.76, p<.001), which suggests the moderating effects of informal control are meaningful in explaining variation in salesforce performance.

Robustness checks and sensitivity analyses Three checks were performed to ensure the robustness of the analysis results. First, we assessed whether the results hold up using an alternative estimation method. We retested the model using two-stage least square (2SLS), which has been used widely to address endogeneity. The results from 2SLS are highly comparable to the results reported in Table 4: two-way interaction between input control and process control shows a positive effect (b=.34, p<.01), whereas two-way interaction between input control and outcome control shows a negative effect (b=−.13, p<.05). In contrast, three-way interaction between input control, process control, and informal control shows a negative effect (b=−.84, p<.10), whereas three-way interaction between input control, outcome control, and informal control shows a positive effect (b=.75, p<.05).

Second, we assessed whether the results hold up when a different set of two-way interactions are included in Model 2 (two-way interaction model). We retested Model 2 with all possible two-way interactions (six in total) included. The results indicate that the focal interactions show the same patterns as the ones reported on Table 4: the two-way interaction between input control and process control is positive (b=.12, p<.10), whereas two-way interaction between input control and outcome control is negative (b=−.13, p<.05).

Third, given that multiple relational norms exist for informal control, we re-estimated the full model (Model 3) with another norm, *mutuality norm*, that refers to the extent to which a firm and its salesforce work toward a common benefit. The results are comparable to the ones based on information exchange norm: three-way interaction between input control, process control, and mutuality norm is negative (b=−.29, p<.01), whereas three-way interaction between input control, outcome control, and mutuality norm is marginally positive (b=.10, p<.10). Additional checks revealed robustness to estimation methods and model specification.[2]

Limitations

Three limitations merit consideration. First, our study failed to consider capability control that is firmly established in marketing literature. We did not include capability control in our study for three reasons. First, the sequential dimension of capability control remains unclear. Capability control can happen either *ex ante* or *ex post*. A supervisor can provide assurance for salesforce skills and abilities either *ex ante* or *ex post* way. This sequential ambiguity of capability control does not clearly fit within the scope of our research question, i.e., that of examining sequential complementarity between controls. Second, our research context differs from those of previous studies. All previous marketing studies on capability control have been conducted under the context of managing industrial salesforce where capability control (e.g., setting personalized skill and abilities goals such as technical certification) of the salesforce is important and readily observable. In contrast, our research context is sales of a consumer product—fashion apparel—where ensuring that salesforce has requisite selling skills and customer relationship management abilities through input control is more common and observable than *ex post* capability of the salesforce.

Third, we traded off the benefit of a more comprehensive model in favor of a more parsimonious model. Although including capability control certainly makes the model more exhaustive, we consider that the marginal benefit not large enough to offset the upside of a parsimonious model. In particular, the correlation between two types of behavior control (activity control and capability control) has been consistently high in prior studies. Given that activity control has already been established in the literature and the marginal gain from adding capability control is not big enough to sacrifice the parsimony of the model, we did not include capability control. Nevertheless, our failure to include capability control should be viewed as a major limitation of the study.

Sequential complementarity between controls is best captured by measuring control at time t_0 (input control) and controls introduced after t_0 and at t_1 in Fig. 1 (process control and outcome control) at two different time frames. Our cross-sectional study of sequential complementarity is a weaker test for the effects of temporal sequence of controls. Finally, our operationalization of informal control-information exchange norm- is a focused but narrower measure of informal control. Informal control can take different forms, including other norms such as solidarity (Heide and John 1992), flexibility (Bello and Gilliland 1997), and interpersonal ties (Doney and Cannon 1997). Therefore, this study did not capture the whole scope of informal control.

Discussion

Contribution

Our study complements extant research on multiple controls of salesforce, particularly recent work such as Miao and Evans (2012, 2013), in three important ways: (1) temporal span, (2) consideration of informal control beyond formal control, and (3) a controller as opposed to controlee perspective.

Temporal span Our sequential complementarity framework spans *ex ante* (input) control and *ex post* controls (process and outcome), whereas previous studies focused on combinatory effects of *ex post* controls (e.g., Miao and Evans 2012, 2013). Examining *ex ante* and *ex post* controls simultaneously is theoretically important because (1) sequential complementarity between *ex ante* and *ex post* controls shapes salesforce performance and (2) considering *ex ante* control helps us address endogenous nature of *ex post* controls that has not been recognized by previous studies. Ignoring the endogeneity of control deployment not only leaves a hole in theoretical development but can also lead to erroneous empirical conclusions.

Informal control Our sequential complementarity framework spans both informal controls and formal (input, process, and outcome) controls, whereas previous studies have focused on combinatory effects among only formal controls. Examining formal and informal controls under one framework is important because (1) formal controls occur under the context of informal controls, and (2) formal and informal controls may complement or substitute each other. Complementing Miao

[2] For robustness, we assessed whether the results hold up when a different variable is used as a WLS regression weight. We retested the model using process control as the regression weight. The results of weighted least square (WLS) are highly comparable to the results reported on Table 4: two-way interaction between input control and process control is positive (b=.17, p<.05), whereas two-way interaction between input control and outcome control is negative (b=−13, p<.01). Conversely, three-way interaction between input control, outcome control, and informal control is positive (b=.12, p<.05), whereas three-way interaction between input control, process control, and informal control is negative (b=−.24, p<.05).

and Evans' (2012, 2013) studies that examined large sales units (with over a thousand employees) and justifiably excluded informal control, our study examines informal control together with formal controls because our sample consists of both large and small apparel manufacturers.

Controller perspective rather than controlee perspective We examined control from the controller perspective. This complements Miao and Evans (2012, 2013) both theoretically and in its focal contribution. They examined controls as is perceived by salespeople and drew on theories from organizational behavior such as expectancy theory and cognitive evaluation theory (i.e., salesperson-centric approach on control) and therefore examined the effect of controls on salesperson-based intervening mechanisms such as salesperson knowledge, role ambiguity, and intrinsic motivation (Miao and Evans 2012) or adaptive selling behavior, selling effort, role ambiguity, and role conflict (Miao and Evans 2013). Because their focus was on salesperson motivation, aptitude, and role perceptions due to salesperson controls, the effect of salesperson controls on performance was indirect through those mediating variables. In contrast, our study theorizes the complementarity/substitution between controls for salesforce performance based on a sales manager–centric approach on control and we examine the effect of control deployment by sales managers. Therefore our main contribution is to unpack the direct effect of combinations of informal and formal controls on salesperson performance.

Theoretical implications

Our overarching theoretical contribution is the new insight into how formal salesforce control mechanisms interact with input control and informal control. Our two original theoretical contributions that stem from these findings have considerable theoretical implications for salesforce control theory, as discussed next.

Sequential complementarity of input control Our results show that *ex ante* input control interacts in nuanced ways with *ex post* formal controls. Input control over the salesforce has remained understudied. Using time as a conceptual lens in our theory development, we recognized that input control temporally precedes other formal control mechanisms such as process control and outcome control. In other words, the degree to which a firm uses input control to select and recruit salesforce, and to screen their intrinsic capabilities, affects whether a subsequent formal control mechanism enhances or hurts salesforce performance. Our results show that while input control strengthens the performance effect of process control (H1), it weakens that of outcome control (H2).

The theoretical implications of these results are two-fold. First, this set of results complements Miao and Evans' (2012, 2013) findings of interactive effects *between* formal control mechanisms in further demonstrating their differential interactive effects with input control (see Onyemah and Anderson 2006, 2009 for another stream of research that examines consistency *within* process control or outcome control). Second, it implies that it is the complementarities in their temporal sequence, not just the choice of formal control mechanisms, in a salesforce control portfolio that affects salesforce performance. Figure 2 illustrates these interactions. The simple slope test of the two-way interaction in Fig. 2a (for H1) shows that process control has a negative effect on salesforce performance when input control is low but that negative effect is alleviated when input control is high. This resonates with the findings of Heide et al. (2007) that behavior monitoring suppresses opportunism when accompanied by a microlevel social contract. Figure 2b (for H2) indicates that outcome control has a steeper, negative effect on salesforce performance when input control is high than when input control is low.

A nonfocal interaction term between input control, process control, and outcome control merits further discussion. One might surmise that this control portfolio should have a positive effect on salesforce performance because three controls are sequentially connected to each other. However, the result shows a nonsignificant interaction effect among them. This result suggests that process control and outcome control do not complement each other as was already seen in nonsignificant two-way interaction between them. Instead, the interaction effect of process control and outcome control is additive.

Sequential complementarity of informal control Our results demonstrate that the extent of informal control profoundly conditions the environment in which formal control mechanisms are deployed. Our emphasis on informal control builds on the closing arguments in Miao and Evans (2013, p. 87) on the need to further examine the relational properties of the sales environment. Responding to their call, we examined sequential complementarities of informal control, showing that the signs of interactions of input control with outcome and process controls flip when either pair is overlaid in a sales environment characterized by high levels of informal control (H3 and H4; three-way interactions). These results complement Miao and Evans (2013) findings of interactive effects between formal control mechanisms in further demonstrating their differential, higher-order interactive effects with informal control.

The slope analyses in Fig. 3 illustrate these three-way interactions. The results for three-way interactions between input control, outcome control, and informal control indicate that, under low informal control (Fig. 3a), the pattern of negative interaction between input control and outcome control in two-way interaction (as is reported on Fig. 2b) stays. This pattern is reversed under high informal control condition (Fig. 3b): the interaction between input control and outcome control becomes positive.

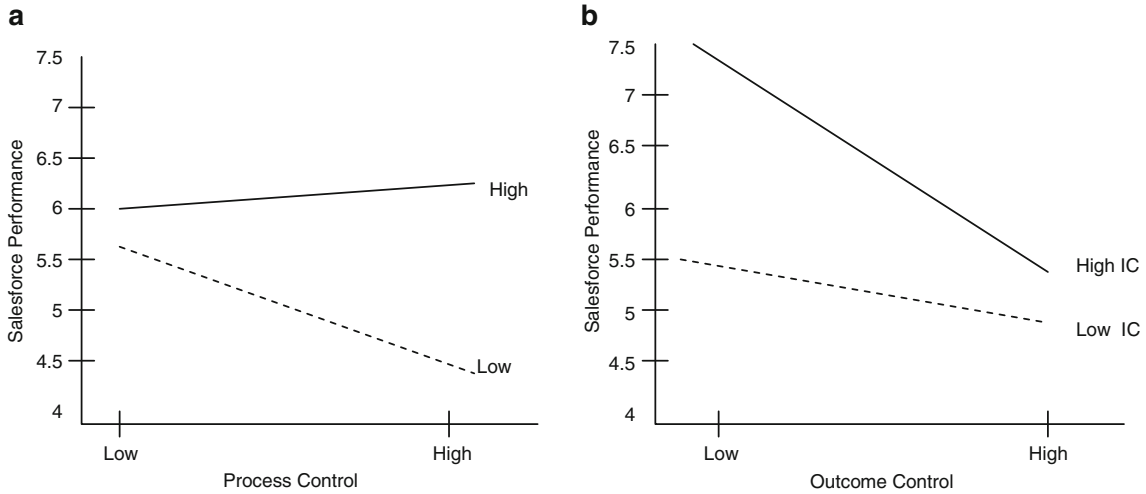

Fig. 2 Interaction of input control with (**a**) process control and (**b**) outcome control

Consider the case of Nordstrom as an example. While Nordstrom's customer-centric practices are legendary, what remains obscure is other drivers of its success. From the standpoint of salesforce control portfolio, Nordstrom's customer-centric practices begin with stringent salesperson selection process (input control), which includes phone interviews, multiple one-on-one interviews, personality tests, background checks, and group interviews. This intensive input control is followed by informal control mechanism, which states: "Use your good judgment in all situations. There will be no additional rules." Nordstrom's emphasis on input control and informal control does not mean neglecting outcome attainment. Nordstrom's focus on outcome control is supported by a high sales commission rate, high visibility of individual sales performance to peers, and promotion of high-performing salespeople to managerial positions. Therefore, Nordstrom's salesforce control portfolio is characterized by the combination of input control, outcome control, and informal control.

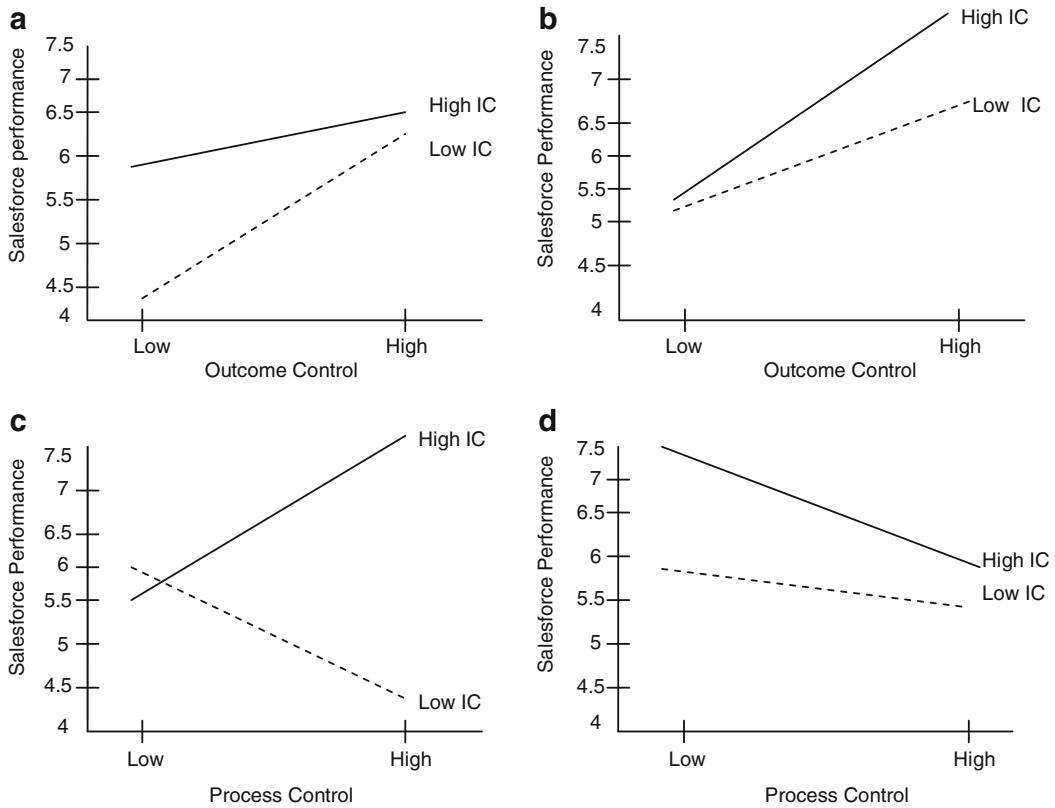

Fig. 3 Sequential complementarity of informal control with formal control mechanisms

The results for three-way interactions between informal control and input control–process control pair indicate that, under low informal control (Fig. 3c), the pattern of positive interaction between input control and process control in two-way interaction (as is reported on Fig. 2a) stays. But, this pattern is reversed under high informal control condition (Fig. 3d): the interaction between input control and process control becomes negative. These results clearly illustrate that adding informal control to the input control–process control pair diminishes the complementary relationship between input control and process control, consistent with H4.

The key theoretical implication is that it is not just the temporal sequence between formal control mechanisms (e.g., input, outcome, and process control) but also the level of informal control in a control portfolio characterizing the sales environment that predicates their effects on salesforce performance.

Managerial implications

Our results have three managerial implications. First, managers must view salesforce control holistically as a configuration of a control portfolio instead of focusing on a single control. As the failure of Best Buy's "results-only work environment" clearly suggests, no single control can address the entire range of issues for managing salesforce. Second, managers need to consider the efficacy of *ex post* formal controls (e.g., outcome control) in conjunction with *ex ante* control. For example, while exercising greater process control by itself can backfire due to its intrusive nature, it is seen to improve salesforce performance when it is preceded by input control. Conversely, although the merits of emphasizing employee accountability and measuring outcomes (i.e., outcome control) have been touted, our results indicate that intensive input control followed by intensive outcome control backfires. Third, managers need to consider the relative efficacy of relying on informal control in conjunction with formal controls. Exercising more informal control is not necessarily better. Adding informal control to the input control–outcome control pair improves salesforce performance by ensuring both rule following and sales goal achievement. In contrast, we found that adding informal control to the input control–process control pair diminishes their complementarity and hurts salesforce performance.

Future work

Our results lead to four promising questions for future research. First, our introduction of sequential complementarity scratches only the surface of the role of time in theorizing the consequences of control. How does the episodic nature of some control mechanisms (e.g., input and outcome controls) and the continuous nature of others (e.g., process and informal controls), and the frequency with which episodic control mechanisms are used (e.g., frequency of measurement) influence their distinctive and collective performance consequences? Second, control mechanisms used in a control portfolio are likely to be deliberate, endogenous choices based on a firm's expectations of their consequences. Models in future work should explicitly incorporate such endogeneity into their theoretical development using instrumental variables such as environmental volatility and sales task characteristics. Third, newer organizational forms blur the intra firm boundary studied here and interfirm boundaries in sales channels (e.g., Heide 2003). How do control mechanisms spanning an intrafirm boundary interact with those spanning an interfirm boundary? Fourth, even though Miao and Evans (2013) alluded to the idea of feedback in their definition of capability control, the influence of feedback on the control–performance link is theoretically absent in controls literature and should be developed in future research. We hope that our findings draw researchers' attention to the role of time in salesforce control and governance.

Appendix A

Measurement items

I. Measurement items used for the focal constructs

Salesforce performance[a] (1: doing a poor job −7: doing a great job)

Please evaluate the performance of your salesforce on the following aspects:

1. Meeting the monthly/quarterly sales goal
2. Meeting the sales growth goal
3. Meeting customer loyalty goal
4. Developing and managing customer relationships
5. Managing details of sales floor
6. Communicating with corporate staff
7. Cooperation between salespeople
8. Merchandise coordination
9. Managing inventory
10. Coordination with department store
11. Dealing with customer complaints

Input control[a] (1: very little emphasis – 7: a great deal of emphasis)

Please indicate how much emphasis you give to the following areas when you recruit a new salesperson.

1. Salesperson's performance in other apparel brands
2. Salesperson's reputation among other apparel companies
3. Salesperson's reputation among other department stores
4. Salesperson's previous experience in apparel industry
5. Salesperson's expertise on fashion
6. Salesperson's service and customer-relating capability
7. Salesperson's sales and marketing capability
8. Salesperson's fit with the focal brand

Process control (1: very little emphasis – 7: a great deal of emphasis) (construct reliability=.87)

Please indicate how much emphasis you give to the following areas of salesforce performance.

1. Managing the sales floor
2. Coordinating cooperation between salespeople
3. Customer education and support activities
4. Selling techniques and procedures used by salesforce

Outcome control (1: very little emphasis – 7: a great deal of emphasis) (construct reliability=.82)

Please indicate how much emphasis you give to the following areas of salesforce performance.

1. Monthly/quarterly sales goal attainment
2. Sales growth rate
3. Inventory management

Informal control (1: completely inaccurate description – 7: completely accurate description) (construct reliability=.83)

How would you describe the extent of information sharing between the headquarter and the salesforce?

1. It is expected that we keep each other informed about events or changes that may affect the other party.
2. Exchange of information takes place frequently and informally, and not only according to a pre specified ways.
3. It is expected that any information that might affect the other party will be provided to them.

II. Measurement items used for control variables and instruments

Decision control[a] (1: entirely decided by salesforce – 7: entirely decided by headquarter)

1. New product planning
2. Reorder production decision
3. Seasonal product decision
4. Customer reward decision
5. Additional order decision
6. Sales process decision
7. After service and customer relationship management

Manufacturer brand reputation[b]: (1: strongly disagree – 7: strongly agree) (construct reliability=.85)

When considering the focal manufacturer's brand being sold on your floor,

1. Customers feel proud of wearing this brand apparel.
2. This apparel brand commands high loyalty from shoppers.
3. This apparel brand enjoys high sales value among shoppers.

Manufacturer flexibility[b]: (1: strongly disagree – 7: strongly agree) (construct reliability=.92)

When considering the focal manufacturer that sells its brand on your floor,

1. In this relationship, the apparel manufacturer is open to the idea of making changes, even after we have made an agreement.
2. In this relationship, the apparel manufacturer makes it possible for us to make adjustments to cope with changing circumstances.*
3. This apparel manufacturer is open to modifying our agreement if unexpected events occur.
4. When an unexpected situation arises, this apparel manufacturer would rather sit down with us and work out a new deal than hold us to the original terms.
5. When unexpected situations arise and we disagree on how to proceed, this apparel manufacturer is open to working out a new deal that is acceptable to both of us.

Salesforce power: (1: strongly disagree – 7: strongly agree) (construct reliability=.71)

1. Our salespeople keep very close relationships with customers.
2. Our salespeople have collected and kept important customer information with themselves.
3. Our sales performance is definitely influenced by the capabilities of salespeople.

Manufacturer power: (1: strongly disagree – 7: strongly agree) (construct reliability=.94)

1. Our brand is one of the leading brands in fashion industry.
2. Our brand has differential advantage over other fashion brands.
3. A department store would suffer great sales loss if they do not carry our brand.
4. Our products enjoy high brand recognition among shoppers.
5. The customer patronage for our brand is stronger than most other brands in fashion apparel industry.

Performance ambiguity: (1: strongly disagree: − 7: strongly agree) (construct reliability=.86)

1. Headquarters cannot find out the performance of our salesforce easily.
2. Headquarters has no idea whether our salesforce is working hard for shoppers.
3. We cannot easily find out how well our salesforce responds to customer needs.*
4. It is hard to evaluate the performance of our salesforce easily and thoroughly.

Centralization: (1: strongly disagree – 7: strongly agree) (construct reliability=.83)

1. Headquarters coordinates and controls the operations of salesforce closely.
2. Headquarters controls the day-to-day sales operations by the plans developed by the headquarters.
3. Headquarters has sole authority in determining the sales policy in department stores.
4. Headquarters has strong influence on the operations of salesforce.

[a] Formative scale.; [b]: information was obtained from retailer respondents; *: Item dropped from further analysis.

Appendix B

Construct Measurement and Validity Assessment

	Confirmatory Factor Analysis of the Construct Measures		
Construct Measure	*Standardized Loadings*	*Construct Reliability*	*Average Variance Extracted*
Process Control			
Item 1	.56		
Item 2	.84	.87	.63
Item 3	.81		
Item 4	.91		
Outcome Control			
Item 1	.90		
Item 2	.87	.82	.62
Item 3	.51		

Norm-based Control			
Item 1	.77		
Item 2	.87	.83	.63
Item 3	.73		
Brand Reputation			
Item 1	.88		
Item 2	.73	.85	.65
Item 3	.81		
Manufacturer Flexibility			
Item 1	.82		
Item 2	.85	.92	.75
Item 3	.89		
Item 4	.89		
Centralization			
Item 1	.75		
Item 2	.84		
Item 3	.77	.83	.56
Item 4	.62		
Performance Ambiguity			
Item 1	.81		
Item 2	.83	.86	.68
Item 3	.83		
Manufacturer Power			
Item 1	.90		
Item 2	.86		
Item 3	.88	.94	.75
Item 4	.85		
Item 5	.81		
Salesforce Power			
Item 1	.64		
Item 2	.71	.71	.45
Item 3	.66		

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