THE GOLDILOCKS EFFECT OF STRATEGIC HUMAN RESOURCE MANAGEMENT? OPTIMIZING THE BENEFITS OF A HIGH-PERFORMANCE WORK SYSTEM THROUGH THE DUAL ALIGNMENT OF VERTICAL AND HORIZONTAL FIT

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Although vertical and horizontal fit in strategic human resource management are foundational to the links between a high-performance work system (HPWS) and organizational performance, little is known about how these two fits interact to affect organizational performance. We address this shortcoming while also advancing knowledge on each type of fit. We offer a more nuanced examination of vertical fit (which has typically been assessed with respect to organizations' broad strategic types) by focusing on the alignment of an HPWS with an organization's market entry timing mode—a key element of strategy. We propose that among organizations pursuing new product development, the effect of an HPWS on organizational performance is most positive under a fast-follower entry timing, followed by a first-mover and finally a fence-sitter entry timing. We then hypothesize that the benefit of vertical fit is magnified when the complementary human resources practices comprising an HPWS are implemented with greater internal consistency (or with similar intensities) across the ability, motivation, and opportunity domains—reflecting a positive interaction between vertical and horizontal fit in predicting the effectiveness of an HPWS. Analyses of four-wave nationally representative panel data yield strong support for our dual-alignment model of SHRM.

Fit is a foundational concept that underlies the linkages between human resources (HR) systems and organizational performance in strategic human resource management (SHRM) scholarship. An HR system may have vertical fit, such that it supports the strategic goals of the organization; an HR system may also have horizontal fit, such that the system's multiple complementary HR practices are aligned to reinforce the effectiveness of one another to support a common purpose (Delery & Doty, 1996; Wright & McMahan, 1992). Although SHRM researchers have examined both types of fit in their work on HR systems, and have noted that "internal [horizontal] and external [vertical] fit are in a constant interplay" (Kepes & Delery, 2007: 387), little is known about how the two fits interact to affect organizational performance.

While the two types of fit differ in their inward (horizontal) versus outward (vertical) orientations, a reflection on prior SHRM scholarship points to the centrality of employee contributions to both types of fit—and offers a clear interface from which to consider how these two fits may interact. In particular, the notion of vertical fit rests on a contingency perspective that the effectiveness of an HR system depends on the extent to which it supports the employee contributions required to achieve an organization's strategic goals (Wright & Snell, 1998). Meanwhile, the value of horizontal fit follows from the logic that any individual HR practice may be limited in its capacity to influence employees' abilities (A), motivation (M), and opportunities (O) to enact desired behaviors (Gerhart, 2007), while multiple complementary HR practices implemented in concert are more likely to comprehensively support the AMOs required for desired employee contributions (Delery & Gupta, 2016). Combining these logics highlights an oversight in prior work: the value of an HR system's vertical fit in terms of eliciting requisite employee contributions to support the organization's strategic goals may be affected by the extent to which the HR system's component practices are selected and configured to complement one another toward desired employee behaviors. Put differently, if we accept both that (1) an HR system is more likely to positively influence organizational performance to the extent that it is comprised of HR practices that support employee behaviors that align with an organization's strategic goals (i.e., when vertical fit is achieved), and (2) an HR system is more likely to support desired employee behaviors when its component HR practices are complementary, such that they mutually reinforce one another toward the same end (i.e., when horizontal fit is achieved), then it follows that a singular focus on only vertical fit or horizontal fit falls short in its consideration of the factors that shape the effectiveness of an HR system to support organizational performance. Empirically, this limitation reflects reduced accuracy in the assessment of an HR system's capacity to contribute to the strategic goals, and thus may partly explain the mixed evidence for the vertical fit effect in the prior research (Wright & Ulrich, 2017).

In this study, we seek to advance research on fit in SHRM by examining the intersection of vertical fit and horizontal fit in the context of a high-performance work system (HPWS). An HPWS has been defined as a configuration of coherent practices designed to enhance employees' skills, motivation, and participation in order to improve the value of their collective contributions (Sun, Aryee, & Law, 2007). Importantly, scholars have explicitly highlighted the centrality of three domains of practices comprising an HPWS: practices that are primarily *ability enhancing* (e.g., rigorous selection, extensive training), those that are *motivation enhancing* (e.g., performance-based pay), and those that are *opportunity enhancing* (e.g., formal participation programs, autonomy in decision-making), leading to broad acceptance of the AMO framework in considering the effect of HPWSs in organizations (Lepak, Liao, Chung, & Harden, 2006).

In considering vertical fit, we focus on the alignment of an HPWS with different entry timing modes in the new product development context. Although strategy is often treated as a "catchall" concept, a more meaningful treatment of strategy recognizes the importance of five elements: areas, vehicles, differentiators, staging, and economic logic (Hambrick & Fredrickson, 2005). Market entry timing represents the staging element of an innovative strategy, wherein organizations decide upon timing of entry into markets with their products (Zott & Amit, 2008). In particular, an organization may choose to be *either* a first mover that develops new products and pioneers new markets earlier than rivals, *or* a fast follower that waits until the first mover launches new products and then quickly introduces superior imitative products (Lieberman & Montgomery, 1988). As a third possibility, an organization may focus on its current products and be the last to enter new product markets, if at all (Olson, Slater, & Hult, 2005). We build on prior evidence that each entry timing mode entails different knowledge requirements (e.g., Robinson, Fornell, & Sullivan, 1992) to suggest that an HPWS demonstrates different levels of vertical fit based on its capacity to support the knowledge requirements for each entry timing mode.

We then argue that horizontal fit achieved through consistent use of practices across the A, M, and O domains of an HPWS is likely to strengthen the performance benefits associated with vertical fit. We suggest that when an organization implements an HPWS with high internal consistency such that practices supporting employees' abilities, motivation, and opportunities are represented at uniform intensities of use, the alignment of the HPWS with the organization's entry timing mode is more likely to translate to increased organizational performance due to the more comprehensive support that the HR system provides for requisite employee contributions.

In sum, we integrate market entry timing research in the strategy literature (Lieberman & Montgomery,

1988) with SHRM research (Snell, Youndt, & Wright, 1996) to propose that an HPWS will have the most positive impact on organizational performance under a fast-follower, followed by a first-mover, and then a last-entrant (i.e., a fence-sitter) entry timing. We further propose that the positive effects associated with vertical fit of the HPWS across entry timing modes will be more pronounced when implementation of the HPWS is more horizontally consistent across its AMO domains. By developing support for this *dual-alignment* model of an HPWS (see Figure 1), the present study contributes evidence of a synergistic interplay between vertical and horizontal fit as a theoretical extension of the fit concepts in SHRM scholarship, thereby enhancing our understanding of the precise nature of the relationship between HR systems and organizational performance. In addition, by developing theory and demonstrating empirical support for the notion of vertical fit of an HPWS with respect to organizations' market entry timing modes (rather than to organizations' broad strategic types, such as product innovation strategy [e.g., Neal, West, & Patterson, 2005]), we highlight the promise of applying greater nuance in our examinations of vertical fit. Lastly, our study sets a precedent for focusing on an organization's relative consistency in the use of HR practices spanning the AMO domains (i.e., internal consistency) as a way to assess the horizontal fit of an HPWS, and lends empirical support for the system effect broadly discussed in the SHRM literature (Gerhart, 2012).

THEORY AND HYPOTHESES

A key theoretical underpinning of the SHRM literature is the value of vertical fit between an organization's HR system and its strategic goals (Snell et al., 1996; Wright, Dunford, & Snell, 2001). Within the strategy literature, proponents of the knowledge-based view have highlighted the centrality of knowledge to competitive advantage, suggesting that organizations' capabilities to effectively identify, access, and manage the knowledge required to achieve their strategic goals create the foundation for superior performance (Grant, 1996; Liebeskind, 1996). Integrating these insights, SHRM scholars have suggested that HR systems are likely to demonstrate vertical fit in an organization to the extent that they support the knowledge-based activities that are required by the organization's strategy (Collins & Kehoe, 2017; Collins & Smith, 2006; Snell et al., 1996).

A second premise in SHRM scholarship is the value of horizontal fit within HR systems. Indeed, the basis for examining the effects of HR systems—rather than of the individual HR practice components—is that internally congruent systems of HR practices provide more comprehensive support for desired employee behaviors and performance by mutually reinforcing the effectiveness of the component practices (Delery & Gupta, 2016). These benefits of horizontal fit will extend to a workforce's knowledge-based activities (e.g., Minbaeva, Pedersen, Björkman, Fey, & Park, 2003), thus creating an interface between horizontal and vertical fits.

HPWS and the New Product Development Context

The development of new products or services represents a key mechanism through which organizations maintain alignment with a dynamic competitive landscape characterized by evolving technologies

FIGURE 1
Proposed Conceptual Model of This Study
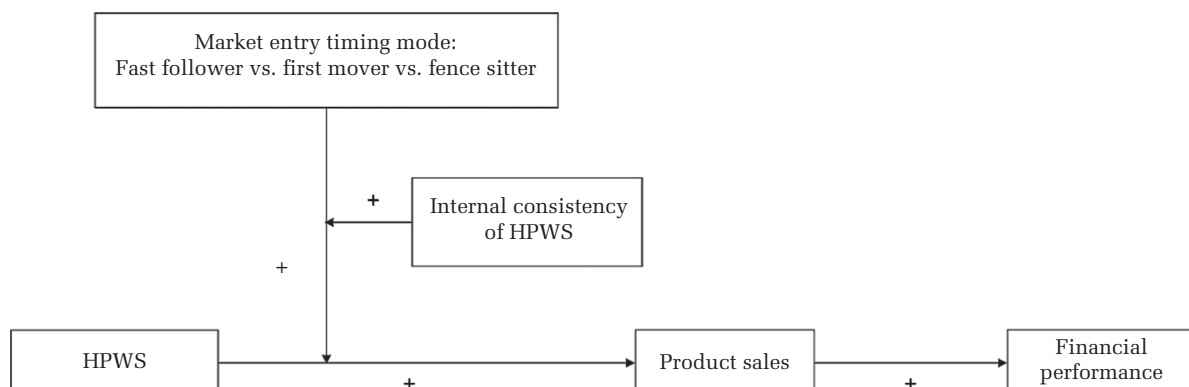
and customer needs (Danneels & Sethi, 2011). Effective knowledge management plays a critical role in the new product development process, which requires that organizational actors identify and recombine relevant existing knowledge in novel ways, while also experimenting with new or alternative technical and market knowledge to achieve solutions that address customers' needs (Collins & Smith, 2006). One key to an organization's success in this process is absorptive capacity—or the capability to recognize, assimilate, and translate external (i.e., technical and market) knowledge into viable new products. Absorptive capacity involves two core elements: (1) prior knowledge (or breadth and depth of existing employee knowledge, skills, and abilities [KSAs]), which is used to assimilate external knowledge; and (2) intensity of effort, which concerns a workforce's aspiration to achieve organizational goals (Cohen & Levinthal, 1990).

We build on the AMO framework (Lepak et al., 2006)—which suggests that employees' contributions are a combined function of their abilities, motivation, and opportunities to perform required tasks—to argue that the mutually reinforcing practices included in an HPWS may strengthen an organization's new product development capability by supporting both elements of absorptive capacity among its workforce. First, an HPWS includes several ability-enhancing practices that support employees' development of and access to relevant knowledge; these include selective staffing based on job-relevant expertise, job rotation that allows for exposure to diverse knowledge, and comprehensive training that broadens employees' stock of relevant skills (Chang, Jia, Takeuchi, & Cai, 2014). In addition, an HPWS offers rewards based on organizational performance (e.g., profit, stock price) to motivate skilled and capable employees to share and combine their knowledge, which can translate into solutions to customer needs in the form of new products (Collins & Smith, 2006). Finally, opportunity-enhancing practices, such as task autonomy, employee participation, and information sharing, contribute to knowledge exchange across work units, thus facilitating assimilation of external knowledge (Jansen, Van Den Bosch, & Volberda, 2005), while also enhancing employees' trust in and perceived support from the organization, thus empowering them to experiment and take risks with new ideas (Patel, Messersmith, & Lepak, 2013).

The Benefits of Vertical Fit Between an HPWS and Market Entry Timing Modes

We have noted that within the pursuit of new product development, organizations choose from among three major entry timing modes in introducing their products to market: first mover, fast follower, or fence sitter. These three modes of market entry timing entail distinct knowledge management requirements (Robinson et al., 1992), which we suggest an HPWS may be better or worse suited to accommodate. Specifically, building on our prior arguments pointing to the effectiveness of an HPWS in supporting absorptive capacity, in the paragraphs that follow we argue that the vertical fit of an HPWS will be stronger to the extent that its support of absorptive capacity aligns with the requirements of an organization's chosen entry timing mode. Based on this logic, we develop predictions that an HPWS will be best suited to meet the organizational knowledge requirements—and thus to support superior performance—under a fast-follower entry timing, followed by a first-mover entry timing (where an HPWS offers limited utility in meeting organizations' knowledge requirements), which are then followed by a fence-sitter entry timing (where an HPWS is excessive with respect to organizations' knowledge requirements).

HPWS in first movers versus fast followers. First movers seek to produce new-to-market products, and thus endeavor to generate novel technical and market knowledge (Lieberman & Montgomery, 1988). The key characteristic of first-mover entry timing, relative to the other entry timing modes, lies in the inherent uncertainties of product technology and market requirements (Lieberman & Montgomery, 1998). Developing new-to-market products requires breakthrough thinking and experimentation with alternative product technologies, which entail high technical uncertainties (Klingebiel & Joseph, 2016). Compared with imitative products developed by followers, first-mover products carry higher risks of adopting technology that may turn out to be impractical, costly, or deficient (Agarwal & Bayus, 2002; Kapoor & Furr, 2015). Even when first movers successfully produce pioneering products, they still face high market risks due to uncertainties in customer needs and reactions (Ethiraj & Zhu, 2008). Therefore, first movers' success depends on the extent to which they resolve these technical and market uncertainties.

In contrast to first movers, fast followers wait to take advantage of available information about first movers' new products and customers, and learn by analyzing first movers' successes and failures (Ethiraj & Zhu, 2008). Taking a more incremental approach to knowledge development, fast followers reverse engineer first movers' new products, survey

their new customers, and assimilate their technical and market knowledge to develop superior imitative products (Lieberman & Asaba, 2006). As such, fast followers face lower levels of technical and market uncertainties and depend on a more defined scope of relevant external knowledge.

Based on these distinctions, while an HPWS is likely to support the creation and exchange of knowledge required for new product development in any organization by leveraging an internal source (i.e., employees) for new knowledge creation (Chang et al., 2014; Patel et al., 2013), we argue that it more *completely* meets the knowledge requirements of organizations pursuing a fast-follower than a first-mover entry timing mode. More precisely, we suggest that an HPWS may be less useful for resolving the technical and market uncertainties facing first movers, who require a higher level of access to external, and often yet-undefined, knowledge sources.

To elaborate, organizations tend to be constrained in their pursuits of the innovative knowledge necessary to create unique value for customers (Levinthal & March, 1993), with a bias toward recognizing and experimenting with familiar (vs. unfamiliar) and mature (vs. nascent) technologies (Ahuja & Lampert, 2001). As a result, organizations often become anchored in their existing technical competencies and perceptions of customer needs, and thus engage in research and development (R&D) activities and search for and assimilate new product knowledge in the neighborhood of such existing knowledge bases (Danneels & Sethi, 2011; McGrath & Nerker, 2004). Moreover, this *bounded* knowledge search becomes more common as organizations attempt to resolve technical and market uncertainties, in which "reliance upon historical experience is often the norm" (Ahuja & Lampert, 2001: 528).

Given this tendency toward bounded knowledge creation, strategy research has underscored that first movers can maximize the chances of new product success by actively tapping various external knowledge sources, including customers, suppliers, universities, professional societies, etc. (Foss, Lyngsie, & Zahra, 2013; Leiponen & Helfat, 2010).[1] Through

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[1] Consistent with this view, many leading companies now adopt a "connect-and-develop" rather than a traditional "invent-it-ourselves" R&D model for new product development. As an example, Procter & Gamble explicitly targets 50% of innovative ideas and technologies from external knowledge sources for its pioneering products (Huston & Sakkab, 2006; Yao & Chang, 2017).

careful selection, along with competitive pay and incentives, an HPWS may help organizations to directly acquire external individuals or units that hold useful knowledge for new product development. However, due to the aforementioned uncertainties, first movers may have difficulty identifying the hiring targets that will provide the technical knowledge most likely to translate to market success. As such, first movers may need to source technical knowledge by entering into flexible arrangements (e.g., licensing, alliances) that enable experimentation with diverse knowledge sources with a limited initial investment in each, rather than internalizing all possible knowledge sources through an HPWS (Steensma & Corley, 2001). An HPWS may also facilitate knowledge creation based on external sources by strengthening an organization's absorptive capacity, as described earlier (Jansen et al., 2005; Minbaeva et al., 2003). However, effective knowledge in-flows from external sources do not always result from enhanced absorptive capacity, because such knowledge acquisition requires aligning strategic objectives and forging mutual trust with exchange partners. These conditions tend to be more effectively established through the efforts of top management (vs. employees), which include making strategic investments (e.g., equity arrangements) in the external sources, as well as reducing organizational differences in terms of management style and overarching work routines (Lavie, Haunschild, & Khanna, 2012; Mowery, Oxley, & Silverman, 1996). Employees may also contribute to such effective knowledge transfer, but would need targeted abilities and motivation that are specifically tailored to foster their relationships with external stakeholders; these have been shown to be more effectively supported by *targeted* HR systems, rather than a generic HPWS (Kehoe & Collins, 2017). Based on this reasoning, we suggest that an HPWS is likely to provide more limited utility in supporting the knowledge requirements of first movers.

Because the fast-follower entry timing entails relatively lower levels of technical and market uncertainties, fast followers may not require the ability to so broadly search and acquire external knowledge and experiment with various alternatives—i.e., those requirements for which an HPWS may have bounded capacity to address. Rather, as noted earlier, the success of fast followers depends more completely on the absorptive capacity required to effectively assimilate first-movers' technology into improved production technology and incorporate first-mover customers' unmet needs into its product

features and marketing programs (Boyd & Bresser, 2008; Minbaeva et al., 2003)—knowledge that can be acquired through a narrower, more defined search process. Thus, while both first movers and fast followers are likely to benefit from the enhanced absorptive capacity provided by an HPWS, fast followers will be the organizations with clearer target technology and customers to leverage for product development; fewer requirements to define and search for the target itself; and less uncertainty and risk of failure associated with the identification, acquisition, and use of new knowledge. Hence, a fast-follower, rather than a first-mover, entry timing mode may serve as a context that affords an HPWS greater capacity to meet the needs of organizations by providing the requisite absorptive capacity as these organizations seek to catch up with pioneers and generate revenues from their products.

HPWS in fence sitters. Fence sitters, which are primarily focused on operating within a narrow competitive scope, maintaining their current markets, and removing market disturbances (Peña & Villasalero, 2010), do not require the same level of knowledge search, exchange, and combination among employees as do first movers or fast followers. Given their focus on current market positions, fence sitters tend to be less dependent on novel technical and market knowledge, and instead focus on manufacturing efficiency (Kabanoff & Brown, 2008). As fence sitters settle into routine technologies, their technical and market knowledge becomes structured and embodied in standard production and marketing processes with no strong need for frequent updates (Fiss, 2011). Thus, fence sitters are less likely to benefit from broadening employees' knowledge and skills through comprehensive training and job rotation, and may instead succeed by relying on employees' accumulated experience with the organization's current technologies. In addition, fence sitters may have less need to offer incentives and autonomy for employees' pursuit of and experimentation with new knowledge via various motivation- and opportunity-enhancing HR practices, due to these organizations' reliance on routine technologies and structured marketing processes. This is not to say that fence sitters will not try to update their products; they sometimes maintain their markets through improving product quality or customer service (Slater, Olson, & Hult, 2006). Rather, it is to suggest that the *primary* strategic focus of fence sitters is on the protection of current products, rather than on new product development (Fiss, 2011), such that their competitive advantage is less likely to

depend on their effective management of employees' knowledge-based activities (Kabanoff & Brown, 2008). For this reason, we expect that the extent to which an HPWS contributes to organizational performance will be more limited among fence sitters than among fast followers or first movers.

We focus on product sales as a proximal indicator of organizational performance. First movers try to acquire the largest customer bases possible to enhance technological learning, as well as to lock in more customers (Golder & Tellis, 1993). Greater customer demand also facilitates longer-term agreements with suppliers, enabling first movers to preempt scarce resources (Lieberman & Montgomery, 1988). As such, product sales level is related to realizing first-mover advantages. Similarly, because fast followers aim to overtake first movers with superior quality or lower price, their performance is gauged by the extent to which they attract first-movers' customers or obtain new customers who are not satisfied by first-movers' products. In either case, product sales reflect their success (Leiponen & Helfat, 2011). Lastly, product sales of fence sitters indicate their success in maintaining their current product markets. Therefore, we expect that the differential effects of vertical fit in an HPWS with respect to different entry timing modes will be manifested in the product sales revenues of the organization.

> *Hypothesis 1. Market entry timing modes will moderate the relationship between the use of an HPWS and subsequent product sales, such that the relationship will be most positive among organizations pursuing a fast-follower entry timing, followed by a first-mover entry timing, and subsequently a fence-sitter entry timing.*

Horizontal Fit of an HPWS Based on Internal Consistency in Implementation

Beyond vertical fit, an additional consideration underlying the relationship between an HR system and organizational performance is horizontal fit (Gerhart, 2007). As noted previously, horizontal fit refers to the complementarity among the HR practices that are implemented as part of an HR system (Wright & McMahan, 1992). The multiple requirements of horizontal fit that are implied in this concept are critical, and yet are often overlooked. First, horizontal fit requires a set of mutually supportive HR practices, such that the effectiveness of the "whole" system is greater than the sum of its components (Ichniowski, Shaw, & Prennushi, 1997;

Kehoe & Collins, 2017). Second, complementarity refers not only to the content of the practices within the HR system but also to *how* the component HR practices are bundled based on the intensity of use across the multiple practices. That is, given a particular HR system, two organizations may report the same average intensity in their use of the system's HR practices as a whole, while the patterns of intensity in their use of different practices may substantially vary. For instance, while one organization may employ all of the HR practices within a system with similar intensity, another organization may report the same average use of the HR system practices but over- (or under-) emphasize some practices relative to others. We conceptualize this distinction using the concept of internal consistency (which, in the present context, is similar in meaning but both conceptually and empirically distinct from the notion of internal consistency in its traditional statistical usage), which refers to the relative uniformity in the intensity of implementation across HR practices within an HR system.

We have already elaborated on the complementarity in the content domains of the practices in an HPWS. Thus, building on this foundation, our focus on internal consistency in the implementation of practices in an HPWS reflects a test of horizontal fit in the present paper. In developing this logic, we draw on the AMO framework in characterizing the HR practices in the HPWS, and thus focus on internal consistency in the intensity of implementation *across* the AMO domains of HR practices, rather than across the individual HR practices within each of the AMO domains, thus assessing an HR system-level (vs. HR domain-level) internal consistency.

As proposed earlier, an HPWS may support organizations' new product development capabilities by (1) enhancing employees' KSAs (e.g., via comprehensive training, job rotation) (*abilities*), (2) motiving them to combine their KSAs to benefit the organization (e.g., via performance-based incentives) (*motivation*), and (c) offering opportunities for employee initiatives and experimentation (e.g., via task autonomy, participation) (*opportunities*). We follow prior SHRM scholarship to argue that these AMO domains of practices within the HPWS display complementary interdependencies, and that reliance on any single domain alone may be insufficient to elicit desired employee outcomes (Lepak et al., 2006; Minbaeva et al., 2003). For instance, employees' KSAs as a raw input may not translate into available knowledge for new product development if employees are not motivated to share their knowledge

(Collins & Smith, 2006; Reinholt, Pedersen, & Foss, 2011). Similarly, even when employees are highly skilled and motivated, their contributions to new product development may be limited if they are not empowered to experiment with their ideas (Chang et al., 2014). This suggests that inconsistent intensities in the employment of practices across the three AMO domains may create a "bottleneck" due to a relative deficiency in requisite abilities, motivation, or opportunities, thereby hindering the effectiveness of the HPWS in supporting desired knowledge behaviors and ultimately the "whole" effect of the HPWS (see also Siemsen, Roth, & Balasubramanian, 2008).

In contrast, high internal consistency in the intensity of use across the AMO domains is likely to strengthen the total positive effect of the HPWS on an organization's product development capabilities, in part by leveraging complementarities among the AMO domains in supporting the organization's absorptive capacity (Cohen & Levinthal, 1990). Minbaeva et al. (2003) demonstrated the combined importance of capability- and motivation-enhancing HR practices in supporting the absorptive capacity required to achieve effective knowledge transfer from external actors. In addition, other research has suggested that the use of empowerment and suggestion programs may enable knowledge workers to better assimilate external knowledge and contribute to organizational innovativeness (Chang, Gong, Way, & Jia, 2013). Given these interdependencies among AMO domains, we can imagine two firms, Firm A and Firm B, with the same moderate intensity of HPWS utilization, but with different patterns of intensity across the A, M, and O domains within the HPWS. For instance, Firm A might implement practices across the three domains with similar intensity, making moderate investments in ability-enhancing practices that support the hiring and development of knowledgeable employees, motivation-enhancing practices focused on performance management and compensation, and opportunity-enhancing practices focused on employee autonomy and participation. In this firm, we would expect skilled employees to have the competence and motivation to recognize, integrate, and apply relevant knowledge in the new product development process, as well as the discretion to make key decisions based on their expertise. In contrast, in Firm B, the same overall system-level implementation intensity may be characterized by limited investment in ability-enhancing practices, moderate investment in motivation-enhancing practices, and increased investment in opportunity-enhancing practices relative

to Firm A. The result, in Firm B, may be employees who are motivated and empowered to make critical contributions but who lack the competence to identify and utilize the most relevant knowledge available—reflecting a bottleneck resulting from Firm B's limited investment in ability-enhancing practices despite the same overall investment in the HPWS relative to Firm A. On these bases, we argue that high internal consistency in implementation across the AMO domains of the HPWS will form the basis for improved horizontal fit, thereby strengthening the effectiveness of the HPWS in supporting desired outcomes, including an organization's product development capabilities.

The Joint Effects of Vertical and Horizontal Fit of an HPWS

While horizontal fit is expected to increase the effectiveness of an HPWS in inducing desired knowledge behaviors among employees, its translation to increased organizational performance is likely to occur through its interaction with the vertical fit of the HPWS. That is, the conveyance of multiple consistent investments through a system of complementary HR practices is likely to increase organizational performance by strengthening the positive effect associated with the system's alignment with the strategic requirements of the organization. Put differently, if we understand the result of horizontal fit as increased (i.e., more consistent) support of an HR system's target employee outcomes, we can imagine that increased horizontal fit (which translates to an increase in target employee outcomes) will disproportionately increase the performance premium enjoyed by organizations pursuing strategic goals with which those target employee outcomes are best aligned.

Specifically, when an HPWS is implemented with high internal consistency, we expect that the difference among the three entry timing modes in the effects of the HPWS on product sales will be magnified. Because both first movers and fast followers require employees to engage in new knowledge search and combination, HPWS internal consistency may augment the benefits of an HPWS for both entry timing modes by reinforcing the capacity of an HPWS to support these knowledge behaviors. Fence sitters may not reap such increased benefits from HPWS internal consistency due to fence sitters' reduced reliance on new knowledge search and combination, and thus a poorer vertical fit with an HPWS, as compared to first movers and fast followers. As noted

by Becker and Huselid (2006: 909), "internal [horizontal] fit should have no value in the absence of external [vertical] fit."

Between the two early market entrants, we expect that fast followers (vs. first movers) will enjoy a greater degree of enhanced benefits from HPWS internal consistency. As noted above, the key reason for the reduced effect of an HPWS for first movers relates to the more significant technical and market uncertainties faced by first movers relative to fast followers. Indeed, strategy research has emphasized the need for pioneering organizations to search broadly for external knowledge sources to tackle these uncertainties (Foss et al., 2013). Even with a strong internal consistency in the implementation of an HPWS, the focus of this HR system is still limited to leveraging an internal knowledge source (i.e., employees) for novel technical and market knowledge. Similarly, even strong internal consistency may not adequately enable the HPWS to ensure knowledge in-flows from external sources, because an HPWS may not substitute for other requisite, qualitatively distinct factors for effective knowledge acquisition, such as strategic investments (Mowery et al., 1996) or targeted HR systems (Kehoe & Collins, 2017). Conversely, strong internal consistency in the implementation of an HPWS will likely augment the effects of the HPWS for fast followers that can learn and adapt from clear target knowledge. In particular, an HPWS can enhance a fast-follower workforce's knowledge stocks in order to better leverage the organization's access to first-mover technical and market knowledge, and can motivate and empower the workforce to translate this knowledge into superior imitative products (Lieberman & Asaba, 2006). Consistent implementation of practices across the AMO domains is required for these knowledge-absorption processes to function in tandem in this way.

In contrast, under low internal consistency, the effects of an HPWS on product sales are likely to be limited for all organizations. As noted previously, the AMO domains of an HPWS display complementary interdependencies, such that a relative neglect of any domain will limit the efficacy of other domains. Hence, even among fast followers, to whom HPWSs are best suited, low HPWS internal consistency may limit the successful absorption of technical and market knowledge from first-mover products to support the development of superior imitative products. In short, because low internal consistency reduces the likelihood that an HPWS will support target employee behaviors, the vertical

fit of an HPWS with an organization's entry timing mode becomes less meaningful in supporting organizational performance. Taken together, we expect that the greatest performance gains associated with an HPWS among fast followers (followed by first movers, and subsequently fence sitters) will be likely to materialize when the HPWS is utilized with high (vs. low) HPWS internal consistency.

> *Hypothesis 2. HPWS internal consistency will moderate the interactive effect between the use of an HPWS and market entry timing modes on product sales, such that the successive effects of HPWS utilization on product sales across the three market entry timing modes (i.e., most positive among fast followers, followed by first movers, and subsequently fence sitters) will be more pronounced when HPWS internal consistency is high.*

Indirect Effects of a Dual-Alignment HPWS on Profitability via Product Sales

So far, we have focused on product sales as an operational outcome of an HPWS in relation to market entry timing modes. However, market entry timing modes concern not just new product introduction, but also commercialization of new products to gain competitive advantage (Lieberman & Montgomery, 1998). Thus, profitability is the ultimate performance measure of an HPWS in this context (Gómez & Maícas, 2011). Given that sales revenues represent employees' productivity and effectiveness in the organization's business operations, product sales are a key predictor of financial performance (Jiang, Lepak, Hu, & Baer, 2012b). Hence, we argue that HPWS will indirectly affect financial performance through the mediating effect of product sales. This mechanism is especially important in that it will determine whether an HPWS generates productivity gains above and beyond the costs of implementing this so-called "high road" HR system (Gerhart, 2007). Further, since an HPWS is expected to provide the strongest vertical fit among fast followers (followed by first movers, and then fence sitters) and achieve stronger horizontal fit under higher HPWS internal consistency, product sales will convey these dual-alignment effects of the HPWS on the future financial performance of the organization.

> *Hypothesis 3. Product sales will mediate the three-way interactive effects among an HPWS, market entry timing modes, and HPWS internal consistency on subsequent organizational financial performance.*

METHOD

Sample

We used data from the Workplace Panel Survey (WPS), which was conducted biennially from 2005 to 2013 by the Korean Labor Institute (KLI), a government-funded research institution. In 2005, the KLI used the national workplace survey by the National Bureau of Statistics of Korea as a sample frame to select 4,275 business establishments with 30 or more employees in 17 different industry sectors. It employed stratified random sampling based on industry and region to ensure sample representativeness. Usable data were received from 1,905 establishments (45% overall response rate). It followed up this data collection in 2007, 2009, 2011, and 2013 with surveys of 1,735, 1,737, 1,770, and 1,775 establishments, respectively. We used four waves of the WPS (2005 to 2011) because the subsequent financial performance data (i.e., $t + 1$) for 2013 were not yet available. After excluding missing data, the final sample size of our four-wave panel data were 1,416 business establishments and 3,456 establishment-year observations. The number of establishments each year was 806, 842, 897, and 911, respectively. As shown in Table 1, manufacturing was the predominant industry sector among 17 different industries (57%; see Table 1 for more details) and the mean number of employees per establishment was 433.19 (standard deviation [*SD*] = 869.69). Comparisons of establishments that did and did not provide complete responses suggested that the original and final samples were largely consistent in terms of industry distribution and establishment size (full information available upon request).

Given that the data unit in this study is an establishment nested in a company, our HPWS and performance outcome variables are also at the establishment level (Wright & Boswell, 2002). This is an important point to clarify in regard to market entry timing. Because companies usually have multiple products, they may adopt different entry timing modes for different products. Thus, while first-mover, fast-follower, and fence-sitter modes are distinct for each product, companies overall may implement hybrid modes. However, as noted below, market entry timing modes in our study apply to the main product of the establishment. Hence, we were able to examine the differential effects of an HPWS across distinct entry timing modes. A related level issue is that the establishment-wide HPWS and performance variables may not be matched with the

TABLE 1
Industry Composition of Sample WPS Establishments

Industry	No. of Establishments	%
Manufacturing	1,963	57
Electricity, gas, water	77	2
Sewage and waste disposal	20	1
Construction	190	5
Wholesale & retail	266	8
Lodging & food service	74	2
Transportation	235	7
Communications	122	4
Finance & insurance	105	3
Real estate	11	0.3
Scientific and technical service	150	4
Business service	67	2
Public administration	6	0.2
Education service	21	1
Public health & social welfare	73	2
Entertainment, culture, & sports	48	1
Other	28	1
Total	3,456	100

Note: n = 3,456 (establishment-year observations; 2005 to 2011).

level of entry timing modes for establishments with multiple products. This possibility is, however, minimized because, in the KLI data collection, establishment was defined as a company or part of a company that performs *one main (or single)* economic activity in a specified location. Even in establishments with multiple products, it is reasonable to expect that employees associated with the main product will constitute the greatest portion of the establishment's entire workforce and, likewise, sales revenues will be largely driven by the main product. In fact, we were able to obtain data on sales revenues from main products for 111 establishments in the final sample, finding that the average ratio of sales represented by the main product was 69.7% (*SD* = 25.44; full information available upon request). Thus, the difference in levels of analysis between an establishment and a main product may not be a major issue.

Measures

HPWS. A management representative in each establishment completed a comprehensive checklist of HR practices. From these, we selected items consistent with HPWS scales used in prior research. We identified 16 HR practices that could be mapped onto the AMO model of HRM by referring to representative HPWS studies including those by Collins and

Smith (2006), Evans and Davis (2005), Guthrie (2001), Huselid (1995), Sun et al. (2007), and Takeuchi, Lepak, Wang, & Takeuchi (2007). Specifically, ability-enhancing HR practices included six items concerning selective staffing based on skills or professional experiences, fit, or commitment (dummies); promotion from within (Likert); job rotation (dummy); and extensive training (counts). Motivation-enhancing HR practices included (1) five compensation items capturing the adoption of profit sharing, employee stock ownership programs, broad-based stock options, and performance-based annual salary plans (dummies); and market-competitive pay levels (Likert); and (2) one developmental performance appraisal item (dummy). Finally, opportunity-enhancing HR practices included four items regarding the presence of an employee suggestion program or quality circles (dummies), degree of work units' task autonomy (Likert), and extensiveness of information sharing (counts). Detailed information about these 16 HR practice measures is provided in Table 2.

To construct an index of the HPWS, we used several steps. First, since the items had different scale formats, we standardized all HR practices (Chadwick, Way, Kerr, & Thacker, 2013; Huselid, 1995) using industry means to assess an establishment's intensity of use for each HR practice relative to other establishments in its industry. We chose this approach as the industry constitutes a key context within which an establishment's strategic and HR needs are determined and HR practices are "framed and executed" (Datta, Guthrie, & Wright, 2005: 135; Kim & Ployhart, 2018; Park & Shaw, 2013). Indeed, an *F*-test revealed significant between-industry variations in the intensity of use for all 16 HR practices. As a few examples, extensive training was relatively high in the finance and insurance industry (mean = 4.28) and low in the sewage and waste disposal industry (mean = 2.70; cf. grand mean = 3.44). Similarly, autonomy was relatively high in the scientific and technical service industry (mean = 2.96) and low in the lodging and food service industry (mean = 2.54; cf. grand mean = 2.73). Next, we created indices of ability-, motivation-, and opportunity-enhancing HR domain scores by averaging the standardized scores of the HR practices within each AMO domain. We then created an overall HPWS index by computing a mean across the three AMO domain scores (Jiang, Lepak, Han, Hong, Kim, & Winkler, 2012a).

HPWS internal consistency. Scholars have conceptualized and measured HR practice configurations

TABLE 2
Definitions and Measures of HR Practices Constituting HPWS Index

HR Practices	Definitions	Measures	Sources	Domains
Selection based on fit	Selection based on employees' overall fit to an organization	Dummy	Collins & Smith (2006)	
Selection based on attitudes	Selection based on employees' commitment and loyalty to the job	Dummy	Collins & Smith (2006); Evans & Davis (2005)	
Selection based on ability	Selection based on employees' skills and professional experiences	Dummy	Takeuchi et al. (2007)	Ability-enhancing HR practices
Promotion from within	Selection preferring internal employees to external candidates, all else being equal	5-point Likert scale	Collins & Smith (2006)	
Job rotation	Lateral transfer of employees among different tasks on a regular basis	Dummy	Collins & Smith (2006)	
Extensiveness of training	The number of different kinds of training programs	Number ranging from 0 to 10	Sun et al. (2007)	
Profit sharing	Pay based on work group or organizational performance	Dummy	Collins & Smith (2006)	
Employee stock ownership programs	Shares of stocks are available to all core employees through stock purchase plans	Dummy	Collins & Smith (2006)	
Broad-based stock option	Shares of stocks are available to all core employees through stock option plans	Dummy	Collins & Smith (2006)	
Performance-based annual salary	Employees' annual salary is linked to their performance in the job	Dummy	Takeuchi et al. (2007)	Motivation-enhancing HR practices
Market-competitive pay	Pay level as compared to that of industry average	How high is your workplace's pay level as compared to that of the industry average? (rated from 1, "very low," to 5, "very high")	Collins & Smith (2006)	
Performance appraisal	Use of performance evaluations for employee development	Dummy	Collins & Smith (2006)	
Employee suggestion	Provision of opportunities for employees to suggest improvements in the ways tasks are performed	Dummy	Sun et al. (2007)	
Quality circle teams	Teams designed for work improvement in terms of customer satisfaction, product quality, cost reduction, and so on	Dummy	Huselid (1995)	
Autonomy	Degree to which work units have discretion in making task-related decisions	To what extent does your work unit have autonomy in making decisions on (1) working methods, (2) the pace of work, (3) the recruitment of new members, (4) member training? (rated from 1, "not at all," to 4, "very much")	Sun et al. (2007)	Opportunity-enhancing HR practices
Information sharing	The number of practices to share management-related information with employees	Number ranging from 0 to 9	Guthrie (2001)	

in multiple ways.[2] Consistent with our focus and definition of internal consistency, in the present study we measured the internal consistency of an establishment's implementation of an HPWS as the *SD* among the three AMO domain scores. That is, beginning with an index value for each of the three A, M, and O domains (which represents the mean level of intensity with which an establishment employed the practices within a particular domain), we computed internal consistency as the *SD* across these three scores (e.g., Oh, Kim, & Van Iddekinge, 2015). We took the reciprocal of this value so that higher scores represent higher internal consistency (e.g., Derfus, Maggitti, Grimm, & Smith, 2008). Given our use of industry-adjusted A, M, and O scores, our internal consistency measure essentially concerns the extent to which an establishment's relative intensities of use for the A, M, and O HR domains in its industry are similar across the three domains.

Market entry timing. A management representative in each establishment selected one of four descriptions of his or her establishment's entry timing modes for its main products or services: first mover, fast follower, fence sitter, or none of the above. The first mover was defined as one in which the establishment quickly responds to customers' unmet needs and early market signals and tries to pioneer offering new products to the market. The fast follower was defined as one in which the establishment carefully researches first-movers' activities and tries to catch up with first movers in a more efficient and planned way, but without pioneering new product development or markets. The fence sitter was defined as one in which the establishment occupies stable markets with existing products, and does not try to develop new products or enter new markets.

We created four dummy variables that correspond to these four choices of market entry timing.

Product sales. The KLI provided the WPS data along with a financial information set. We used product sales divided by the total number of employees to account for establishment heterogeneity in terms of size. Given the potential for reciprocal relationships between an HPWS and establishment performance, and the time it takes for an HPWS to affect performance (Birdi et al., 2008; Wright, Gardner, Moynihan, & Allen, 2005), we used a two-year subsequent product sales ($t + 1$) model as a proximal outcome while controlling for current sales (t) (Autio, Sapienza, & Almeida, 2000; Kim & Ployhart, 2014).

Financial performance. We employed a ratio of operating profit to average total assets (ROA) as a financial performance measure. Because the distribution of financial performance had high skewness and kurtosis (skewness = 3.08, kurtosis = 281.32; Shapiro–Francia test $p < .05$), the variable was winsorized at the 1% level at both tails to reduce the influence of extreme values (e.g., Cheng, Ioannou, & Serafeim, 2014; Patel & Cooper, 2014). As with product sales, we used subsequent financial performance ($t + 1$) as a dependent variable with current financial performance (t) controlled for (Autio et al., 2000; Kim & Ployhart, 2014).

Control variables. Consistent with prior research, we controlled for establishment size measured by the total number of employees (logarithm) (Collins & Smith, 2006) and total assets (logarithm) (Shaw, Park, & Kim, 2013), because they may reflect the slack resources available for using an HPWS and may correlate with establishment performance. We also included the capital-to-labor ratio (logarithm of plant and equipment value divided by the total number of employees) to control for the potential impact of capital investment (Chadwick, Super, & Kwon, 2015). Lastly, we included establishment- and year-fixed effects in our regressions to control for unobserved heterogeneity between establishments and for annual trends that may affect establishment performance, respectively (Krause, Priem, & Love, 2015).

Analytic Strategy

Given the panel structure of our data, we used fixed-effects models to control for nonobserved fixed sources of confounding factors (Gerhart, 2013; see also, e.g., Bartel, 2004; Jones, Kalmi, & Kauhanen, 2010). Indeed, the Hausman tests (Baltagi, 1995) of

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[2] An alternative test of complementary relationships among HR practices is the examination of interactions among the AMO domains (Cappelli & Neumark, 2001; Chadwick, 2010). However, since our study investigates the joint effect of vertical and horizontal fit, use of the moderation model would require us to test a four-way interaction effect among the three AMO domains and market entry timing mode. Due to insufficient power, this analysis proved intractable; the four-way interaction effect did not reach statistical significance. However, a three-way interaction involving the A × O term along with a fast follower (vs. a first mover) entry timing showed results consistent with our theory, providing partial support for our dual-alignment model. Results are available upon request.

the final model for each dependent variable revealed that fixed-effects specifications were preferred to random-effects specifications (product sales as a dependent variable: $\chi^2_{(19)} = 1594.84$, $p < .05$; financial performance as a dependent variable: $\chi^2_{(21)} = 909.12$, $p < .05$). In addition, we performed supplementary analyses to examine the robustness of our findings with regard to the centering approach for HPWS, the entry timing measure, and the control variables used in our study (see Appendix A).

RESULTS

In Table 3 we provide descriptive statistics, including within- and between-establishment *SD*s, of our study variables. Hypothesis 1 proposed that the relationship between an HPWS and subsequent product sales would be most positive among fast followers, followed by first movers, and then fence sitters. To compare the effects of an HPWS among these three entry timing modes, we examined two separate models with a first-mover and a fence-sitter entry timing dummy as a referent, respectively. In the first model, where a first-mover entry timing was a referent (i.e., Model 2 in Table 4), an HPWS was more positively associated with product sales among fast followers than among first movers ($B = .20$, 95% confidence interval [CI] [.04, .37], $p < .05$). In addition, as indicated by Model 3 in Table 4 with a fence-sitter entry timing as a referent, an HPWS was more positively associated with product sales among fast followers than among fence sitters ($B = .27$, 95% CI [.05, .49], $p < .05$). However, this relationship was not significantly stronger among first movers than among fence sitters ($B = .07$, 95% CI [−.13, .27], n.s.). To further probe the nature of the interaction, we calculated the effect of an HPWS on product sales for each of the three entry timing modes in Hypothesis 1 individually (Cohen, Cohen, West, & Aiken, 2003). As shown in Figure 2, the effect of an HPWS was significantly positive only under a fast-follower entry timing ($B = .21$, 95% CI [.06, .36], $p < .05$), whereas it was not significant under a first-mover ($B = .01$, 95% CI [−.11, .13], n.s.) or a fence-sitter ($B = −.14$, 95% CI [−.39, .11], n.s.) entry timing. Taken together, these results provide partial support for Hypothesis 1, though we found full support for the core part of our hypothesis concerning the most pronounced effect of an HPWS among fast followers.

Hypothesis 2 proposed that internal consistency of an HPWS would magnify the positive interactive effect of an HPWS with a fast-follower (vs. a first-mover and subsequently a fence-sitter) entry timing

mode. As in testing for Hypothesis 1, we ran two models with different entry timing modes as a referent. Model 4 in Table 4, which used a first-mover entry timing mode as a referent, shows that the three-way interaction of an HPWS, fast-follower entry timing, and HPWS internal consistency were significant in predicting product sales ($B = .07$, 95% CI [.03, .11], $p < .05$). Specifically, when HPWS internal consistency was high, the interactive effect of an HPWS and fast-follower (vs. first-mover) entry timing was .61 (95% CI [.34, .88], $p < .05$), whereas when internal consistency was low, it was −.16 (95% CI [−.43, .11], n.s.); the difference between the two conditions was also significant (difference = .77, 95% CI [.34, 1.20], $p < .05$).

In addition, Model 5 in Table 4, which used a fence-sitter entry timing mode as a referent, indicates that the three-way interactive effect of an HPWS, fast-follower entry timing, and HPWS internal consistency was significant ($B = .07$, 95% CI [.01, .13], $p < .05$). Specifically, when HPWS internal consistency was high, the interactive effect of an HPWS and fast-follower (vs. fence-sitter) mode was .70 (95% CI [.29, 1.12], $p < .05$), but when internal consistency was low, it was −.10 (95% CI [−.52, .32], n.s.); the difference between these two conditions was also significant (difference = .80, 95% CI [.10, 1.50], $p < .05$). Hence, the core part of Hypothesis 2, concerning the interaction among an HPWS, fast-follower (vs. first-mover, fence-sitter) mode, and HPWS internal consistency, was supported. However, we note that the three-way interactive effect of an HPWS, first-mover (vs. fence-sitter) mode, and HPWS internal consistency on product sales was not significant ($B = .01$, 95% CI [−.05, .07], n.s.).

To facilitate interpretation of the results for Hypothesis 2, we plotted the simple slopes for the effect of an HPWS on product sales at one *SD* above and below the mean of HPWS internal consistency under each entry timing mode (Cohen et al., 2003). As shown in Figure 3, the effects of an HPWS on product sales significantly varied across the three entry timing modes when HPWS internal consistency was high; the effect of an HPWS was significantly positive under a fast-follower ($B = .54$, 95% CI [.30, .78], $p < .05$), rather than a first-mover ($B = −.04$, 95% CI [−.23, .15], n.s.) or a fence-sitter ($B = −.11$, 95% CI [−.82, .61], n.s.), entry timing. In terms of the economic effect, given the coefficient of an HPWS under the dual-alignment condition (i.e., a fast-follower entry timing and high internal consistency; .54), an establishment's implementation of an HPWS with an intensity at one *SD* (i.e., .39) above its industry mean

TABLE 3
Descriptive Statistics for Study and Control Variables

Variable	M	Overall SD	Between SD	Within SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Log of workforce size	5.25	1.22	1.21	0.28												
2. Log of total assets	11.51	2.32	2.33	0.38	.59											
3. Capital to labor ratio	4.09	2.39	2.38	0.64	.05	.68										
4. HPWS	0.00	0.39	0.33	0.22	.35	.43	.26									
5. HPWS internal consistency	4.07	5.61	5.52	3.67	.00	.00	.01	.01								
6. First-mover entry timing	0.51	0.50	0.40	0.34	.07	.13	.09	.16	.02							
7. Fast-follower entry timing	0.29	0.45	0.36	0.32	−.03	−.04	−.02	−.07	.00	−.66						
8. Fence-sitter entry timing	0.10	0.30	0.23	0.22	−.07	−.07	−.04	−.10	−.03	−.34	−.21					
9. Other entry timing	0.10	0.30	0.25	0.20	.00	−.08	−.10	−.07	.01	−.34	−.21	−.11				
10. Product sales (*t*)	6.29	1.67	1.58	0.47	.07	.76	.72	.31	.01	.11	−.04	−.03	−.09			
11. Financial performance (*t*)	5.25	10.82	10.00	6.00	.02	.06	.04	.06	−.01	.06	.00	−.03	−.06	.18		
12. Product sales (*t* + 1)	6.38	1.70	1.62	0.50	.10	.72	.68	.30	.01	.10	−.03	−.04	−.10	.90	.14	
13. Financial performance (*t* + 1)	3.42	17.74	19.18	8.09	.01	.12	.14	.07	−.02	.05	.03	−.02	−.10	.16	.43	.21

Notes: n = 3,456 (establishment-year observations). Other entry timing indicates establishments that chose the "none of the above" option in the market entry timing measure. Product sales refer to log of product sales over the total number of employees; operating ROA was measured in percentage points. All correlations greater than |.04| are significant at *p* < .05.

TABLE 4
Results of Fixed-Effects Regressions Predicting Subsequent Product Sales

Variable	Dependent Variable (DV) = Product Sales ($t + 1$)				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Main effects	**Hypothesis 1a**	**Hypothesis 1b**	**Hypothesis 2a**	**Hypothesis 2b**
(Constant)	5.98* (0.42)	5.98* (0.42)	5.99* (0.42)	5.95* (0.42)	5.97* (0.42)
Product sales (*t*)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)	−0.01 (0.04)	−0.01 (0.04)
Log of workforce size	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)
Log of asset	−0.01 (0.04)	−0.01 (0.04)	−0.01 (0.04)	0.00 (0.04)	−0.01 (0.04)
Capital to labor ratio	0.05* (0.02)	0.06* (0.02)	0.06* (0.02)	0.06* (0.02)	0.06* (0.02)
Other entry timing		−0.01 (0.06)	−0.02 (0.07)	−0.01 (0.06)	−0.02 (0.07)
Independent variables					
HPWS	0.06 (0.05)	0.06 (0.05)	0.06 (0.05)	0.06 (0.05)	0.06 (0.05)
First-mover entry timing	0.00 (0.06)		-0.01 (0.05)		−0.01 (0.05)
Fast-follower entry timing	0.09 (0.06)	0.09* (0.04)	0.08 (0.05)	0.08* (0.04)	0.08 (0.05)
Fence-sitter entry timing	0.03 (0.07)	0.00 (0.05)		−0.01 (0.05)	
HPWS internal consistency				0.00 (0.00)	0.00 (0.00)
Testing two-way interactions					
HPWS × First mover			0.07 (0.10)		0.08 (0.10)
HPWS × Fast follower		0.20* (0.09)	0.27* (0.11)	0.23* (0.09)	0.30* (0.11)
HPWS × Fence sitter		−0.15 (0.13)		−0.14 (0.14)	
HPWS × HPWS internal consistency				0.01 (0.01)	0.01 (0.01)
Testing three-way interactions					
First mover × HPWS internal consistency					0.00 (0.01)
HPWS × First mover × HPWS internal consistency					0.01 (0.03)
Fast follower × HPWS internal consistency				0.00 (0.01)	0.01 (0.01)
HPWS × Fast follower × HPWS internal consistency				0.07* (0.02)	0.07* (0.03)
Fence sitter × HPWS internal consistency				−0.02 (0.02)	
HPWS × Fence sitter × HPWS internal consistency				0.03 (0.05)	
Establishment fixed effects?	Yes	Yes	Yes	Yes	Yes
Year fixed effects?	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.071	0.075	0.074	0.084	0.083
F-value	14.01*	12.55*	12.48*	9.77*	9.57*

Notes: n = 3,456 (establishment-year observations). Other entry timing indicates establishments that chose the "none of the above" option in the market entry timing measure. Standard errors are in parentheses. R^2 (within) is the R^2 from the mean-deviated regression. The entry timing modes were effect coded in Model 1, which concerns the main effects of the study variables.
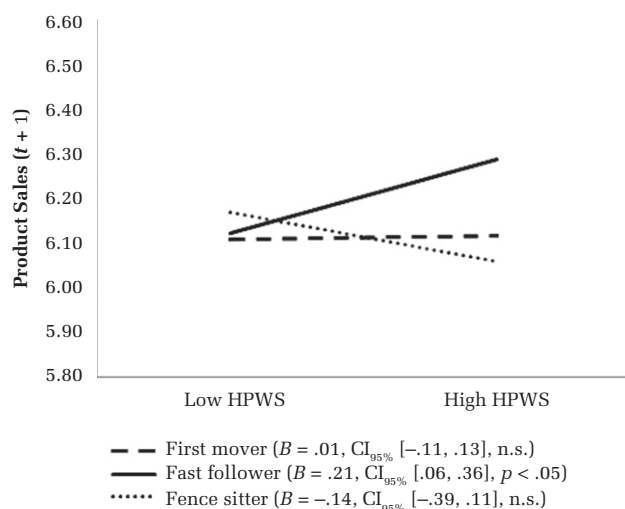
* $p < .05$

was, *ceteris paribus*, associated with a .21 (.54 × .39 = .21) increase in product sales (per employee) relative to the implementation of an HPWS at the industry mean (in dollar values, $519.85 [thousands] to $640.64 [thousands]). This represents an increase of 23.24% in product sales (per employee) ($= \frac{\$640.64 \ [\text{thousands}] \ - \$519.85 [\text{thousands}]}{\$519.85 [\text{thousands}]}$). In contrast, Figure 3 shows that when internal consistency was low, the effects of an HPWS on product sales did not significantly vary across the three entry timing modes.

Lastly, Hypothesis 3 concerned the mediating role of product sales between an HPWS (in conjunction with market entry timing modes and internal consistency) and subsequent financial performance. First, Model 6 in Table 5 indicates that product sales were positively related to financial performance ($B = 3.72$,

95% CI [3.02, 4.42], $p < .05$). Next, the results of the bootstrapping analysis (with 20,000 iterations) indicated that the three-way interaction of an HPWS, fast-follower (vs. first-mover) entry timing, and HPWS internal consistency was indirectly related to financial performance via product sales ($B = .26$, 95% CI [.05, .63], $p < .05$). Likewise, product sales also mediated the three-way interactive effect involving fast-follower (vs. fence-sitter) entry timing on financial performance ($B = .27$, 95% CI [.03, .72], $p < .05$). Thus, we found support for the core part of Hypothesis 3, involving fast-follower (vs. first-mover, fence-sitter) entry timing. However, we note that product sales did not significantly mediate the three-way interactive effect among an HPWS, first-mover (vs. fence-sitter) entry timing, and HPWS internal consistency on financial performance ($B = .03$, 95% CI [−.20, .25], n.s.).

FIGURE 2
Effects of an HPWS on Subsequent Product Sales Across Market Entry Timing Modes

First mover ($B = .01$, $CI_{95\%}$ [−.11, .13], n.s.)
Fast follower ($B = .21$, $CI_{95\%}$ [.06, .36], $p < .05$)
Fence sitter ($B = −.14$, $CI_{95\%}$ [−.39, .11], n.s.)

As a supplementary analysis, we tested the conditional indirect effects of an HPWS on financial performance via product sales under various combinations of entry timing modes and internal consistency degrees. Table 6 shows that the indirect effect of an HPWS was significantly positive under fast-follower entry timing and high internal consistency ($B = 2.01$, 95% CI [.66, 4.39], $p < .05$), which was stronger than all other conditions of entry timing modes and internal consistency degrees. To gauge the practical significance of the indirect effect, we calculated a ratio of the indirect effect to the total effect (Alwin & Hauser, 1975; Sobel, 1982), along with an index of mediation (Preacher & Hayes, 2008). Under a fast-follower entry timing and high HPWS internal consistency, the ratio of the indirect effect was .42 ($= \frac{2.01}{2.01 + 2.74}$, given the direct effect of 2.74). Further, the index of mediation, which refers to an indirect effect computed by two standardized coefficients representing first-stage (a) and second-stage (b) paths, was .044 ($= ab\frac{\sigma_X}{\sigma_Y} = 2.01 \times \frac{.39}{17.74}$; σ indicates an SD). In terms of the economic effect, given the indirect effect coefficient of an HPWS under the dual-alignment condition (i.e., 2.01), an establishment's implementation of an HPWS with an intensity at one SD (i.e., .39) above its industry mean was, *ceteris paribus*, associated with a .78 (2.01 × .39 = .78) increase in financial performance relative to the implementation of an HPWS at the industry mean (i.e., 3.42–4.20%). This represents an increase of 22.81% ($= \frac{4.20\% - 3.42\%}{3.42\%}$) in financial performance.
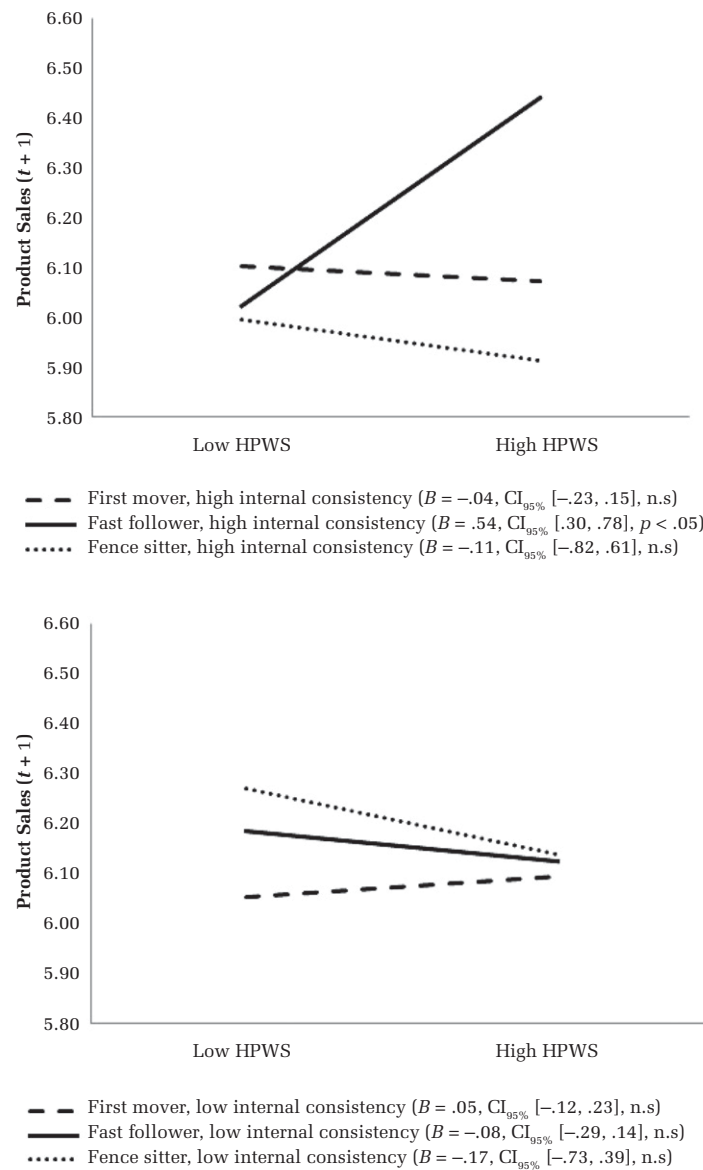
DISCUSSION

Based on a nationally representative four-wave panel sample of Korean establishments, our study provides support for a dual-alignment model of SHRM. An HPWS was more positively related to future product sales among establishments pursuing a fast-follower, relative to a first-mover or fence-sitter, entry timing mode. These performance benefits associated with vertical fit were more pronounced in the context of stronger horizontal fit—reflected in internal consistency in the implementation of practices across the AMO domains of the HPWS. Product sales then conveyed the dual-alignment effect of an HPWS on financial performance.

Theoretical Implications

Our study makes important contributions to SHRM scholarship. First, our study integrates and advances knowledge on two foundational concepts in SHRM—vertical and horizontal fit—by conceptualizing and demonstrating support for the interplay between these two types of fit in supporting superior organizational performance. The main mechanism by which HR systems contribute to an organization's performance is by supporting the contributions of employees—including their knowledge search and combination behaviors—that are required to implement business strategies (Kang, Morris, & Snell, 2007; Patel et al., 2013). Importantly, because employees' behaviors are a combined function of their abilities, motivation, and opportunities, the implementation of HR practices that target just one or two of the AMO domains may be insufficient to elicit the workforce contributions required to meet an organization's strategic needs (Delery & Gupta, 2016). Rather, the consistent use of complementary HR practices spanning all three of these AMO domains is more effective in achieving desired outcomes. Thus, we argue and find that an HPWS has the greatest positive impact on organizational performance when vertical fit is achieved through the external alignment of the HPWS with the organization's entry timing mode *and* when horizontal fit is achieved through high internal consistency in the implementation across the AMO domains of the HPWS. By demonstrating this dual-alignment effect, our study helps to address the core question in SHRM scholarship concerning when and how HR systems maximally influence organizational performance, as well as to account for the mixed evidence regarding the individual effect of either

FIGURE 3
Effects of an HPWS on Subsequent Product Sales Across Market Entry Timing Modes Under High versus Low Degrees of HPWS Internal Consistency

— — First mover, high internal consistency ($B = -.04$, $CI_{95\%}$ [−.23, .15], n.s)
——— Fast follower, high internal consistency ($B = .54$, $CI_{95\%}$ [.30, .78], $p < .05$)
······ Fence sitter, high internal consistency ($B = -.11$, $CI_{95\%}$ [−.82, .61], n.s)

— — First mover, low internal consistency ($B = .05$, $CI_{95\%}$ [−.12, .23], n.s)
——— Fast follower, low internal consistency ($B = -.08$, $CI_{95\%}$ [−.29, .14], n.s)
······ Fence sitter, low internal consistency ($B = -.17$, $CI_{95\%}$ [−.73, .39], n.s)

type of fit on organizational performance (Wright & Ulrich, 2017).

Second, by focusing on the vertical fit of an HPWS in relation to an organization's entry timing mode, we examine a key element of business strategy (Hambrick & Fredrickson, 2005) that has often been neglected in SHRM research. Prior research taking a contingency perspective within the SHRM literature has sought to establish the importance of vertical fit between organizations' HR systems and their broad strategic types, with several studies focusing on the alignment between various high-investment HR systems and strategic types focused on innovation or product quality (e.g., product differentiators, prospectors); this research has yielded inconclusive support (Wright & Ulrich, 2017). Our findings suggest that the value of vertical fit *within* a broader strategic type, such as new product development, may depend on the alignment of the HR system with more nuanced decisions surrounding staging, such as timing of product market entry (Hambrick & Fredrickson, 2005; Zott & Amit, 2008). In particular,

TABLE 5
Results of Fixed-Effects Regressions Predicting Subsequent Financial Performance

Variable	DV = Financial performance ($t + 1$)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
(Constant)	2.23 (6.63)	2.27 (6.56)	2.36 (6.60)	1.78 (6.57)	2.44 (6.62)	−20.33* (7.08)
Financial performance (t)	−0.25* (0.03)	−0.25* (0.03)	−0.25* (0.03)	−0.25* (0.03)	−0.25* (0.03)	−0.25* (0.03)
Log of workforce size	−1.57* (0.69)	−1.56* (0.69)	−1.57* (0.69)	−1.56* (0.69)	−1.54* (0.69)	−1.46 (0.85)
Log of asset	0.86 (0.57)	0.87 (0.57)	0.87 (0.57)	0.89 (0.57)	0.84 (0.57)	0.79 (0.67)
Capital to labor ratio	0.15 (0.32)	0.17 (0.32)	0.15 (0.32)	0.19 (0.32)	0.15 (0.32)	−0.07 (0.32)
Other entry timing		−0.30 (0.93)	−0.21 (1.11)	−0.30 (0.93)	−0.32 (1.11)	−0.24 (1.08)
Independent variables						
HPWS	1.10 (0.80)	1.09 (0.80)	1.11 (0.80)	0.99 (0.81)	0.91 (0.81)	0.69 (0.79)
First-mover entry timing	0.22 (0.93)		0.09 (0.87)		0.00 (0.87)	0.03 (0.85)
Fast-follower entry timing	−0.14 (0.97)	−0.37 (0.60)	−0.31 (0.89)	−0.35 (0.60)	−0.36 (0.90)	−0.64 (0.87)
Fence-sitter entry timing	0.24 (1.11)	−0.32 (0.88)		−0.29 (0.90)		
HPWS internal consistency				0.04 (0.05)	0.04 (0.05)	0.04 (0.05)
Testing two-way interactions						
HPWS × First-mover			−0.90 (1.67)		−0.42 (1.68)	−0.69 (1.64)
HPWS × Fast-follower		2.77* (1.41)	2.38 (1.84)	2.75 (1.42)	2.69 (1.86)	1.58 (1.81)
HPWS × Fence-sitter		−1.99 (2.18)		−2.03 (2.30)		
HPWS × HPWS internal consistency				−0.23 (0.16)	−0.28 (0.16)	−0.31 (0.15)
Testing three-way interactions						
First-mover × HPWS internal consistency					−0.11 (0.17)	−0.12 (0.16)
HPWS × First-mover × HPWS internal consistency					0.89 (0.50)	0.87 (0.49)
Fast-follower × HPWS internal consistency				−0.02 (0.12)	−0.10 (0.18)	−0.13 (0.18)
HPWS × Fast-follower × HPWS internal consistency				−0.03 (0.32)	0.66 (0.53)	0.39 (0.52)
Fence-sitter × HPWS internal consistency				0.00 (0.32)		
HPWS × Fence-sitter × HPWS internal consistency				0.18 (0.90)		
Product sales (t)						0.16 (0.60)
Product sales ($t + 1$)						3.72* (0.36)
Establishment fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	.051	.053	.053	.055	.057	.104
F-value	9.84*	8.78*	8.74*	6.18*	6.38*	11.21*

Notes: $n = 3,456$ (establishment-year observations). Other entry timing indicates establishments that chose the "none of the above" option in the market entry timing measure. Standard errors are in parentheses. R^2 (within) is the R^2 from the mean-deviated regression. The entry timing modes were effect coded in Model 1, which concerns the main effects of the study variables.

* $p < .05$

our findings suggest that an HPWS may have varied capacity to meet the strategic requirements of different entry timing modes, based on the distinct knowledge requirements associated with each, with an HPWS having its most positive effect under fast-follower entry timing. This, we suggest, is because the knowledge generation and utilization supported by an HPWS may not sufficiently extend beyond existing knowledge bases to tackle the high technical and market uncertainties facing first movers. In addition, an HPWS may exceed the knowledge requirements of fence sitters.

Third, despite the defining emphasis on the *system* effect in the SHRM literature, the field lacks evidence of the benefits associated with the use of complementary HR practices (Gerhart, 2012). Related, existing research on HPWSs has tended to assume complementarity in content and consistency in implementation across the entire HR system, with limited focus on actually assessing the presence or benefits of horizontal fit among the AMO domains in the HPWS (Chadwick, 2010). Our study advances the notion that examining various patterns of intensity in implementation across the AMO domains represents a

TABLE 6
Summary of Indirect Effects of an HPWS on Subsequent Financial Performance via Product Sales

Market Entry Timing Mode	HPWS Internal Consistency	Indirect Effect B (SE)	95% Confidence Interval LL	95% Confidence Interval UL	Difference (Fast Follower & High Internal Consistency vs.) B (SE)	95% Confidence Interval LL	95% Confidence Interval UL
Fast follower	High	2.01* (0.87)	[0.66	4.39]			
	Average	0.87* (0.38)	[0.34	2.03]	1.15* (0.63)	[0.10	2.61]
	Low	−0.28 (0.56)	[−1.56	0.70]	2.29* (1.26)	[0.19	5.22]
First mover	High	−0.15 (0.57)	[−1.38	0.97]	2.16* (1.02)	[0.71	5.10]
	Average	0.03 (0.27)	[−0.52	0.57]	1.99* (0.88)	[0.65	4.31]
	Low	0.20 (0.49)	[−0.68	1.32]	1.81* (0.96)	[0.40	4.59]
Fence sitter	High	−0.40 (1.48)	[−4.88	1.78]	2.41* (1.79)	[0.17	9.35]
	Average	−0.52 (0.60)	[−2.36	0.29]	2.53* (1.16)	[0.89	6.07]
	Low	−0.64 (1.10)	[−3.11	1.31]	2.66* (1.47)	[0.58	6.94]

Notes: $n = 3,456$. High and Low indicate one *SD* above and below the average, respectively. LL and UL = lower limit and upper limit of the confidence internal, respectively. All estimates were tested from 20,000 bootstrapping replications.

* $p < .05$

meaningful way to conceptualize alternative configurations of HR practices, and in so doing demonstrates support for the view that strong internal consistency can unlock the synergistic potential among AMO domains and augment the benefits of HPWS utilization.

Practical Implications

Our study also offers practical insights into the strategic value of HRM by demonstrating the significant but contingent benefits of an HPWS. Specifically, our results suggest that a one *SD* increase in HPWS may correspond to a 20% or more increase in sales and financial performance, and that these are not universal. Rather, such performance gains depend on both the alignment of an HPWS with an organization's entry timing mode and the extent to which the organization achieves consistent implementation of component HR practices spanning the A, M, and O domains of the HPWS. Thus, our research suggests that an HPWS should be implemented only after managers determine whether the key technical and market knowledge for successful strategy enactment is within reach of employees for assimilation and leveraging (e.g., fast followers); requires substantial trial and error, or partnering with various external parties (first movers); or is already codified, with low need for frequent updates (fence sitters). Our findings suggest that it is the first condition (i.e., among fast followers) in which an HPWS will have greatest capacity to support superior organizational performance. Further, even among fast followers, our results suggest that performance will be maximized when an organization uses an HPWS with high internal consistency across HR practices

that develop (A), motivate (M), and empower (O) employees to engage in desired knowledge behaviors. Thus, HR managers in fast-follower organizations would be well advised to attend to all three AMO domains and to balance budget and resource allocations accordingly (see Gerhart, 2012: 158, regarding whether or how SHRM research can inform the importance of a *system* of HR practices).

Limitations and Future Research

We note several limitations of the present study. First, our results concerning the vertical fit between an HPWS and market entry timing modes may be affected by unexplored contextual factors that influence the validity or generalizability of our assumptions about organizations' entry timing modes. For example, strategy research has suggested that first-mover advantages may be more likely to occur and to be sustained in industries characterized by smooth (vs. abrupt) paces of technological and market change (Suarez & Lanzolla, 2007). Under these conditions, first movers may experience less technical and market uncertainty, thereby mitigating some of the limitations of an HPWS in this context. To the extent that these industry factors are time invariant, they will not influence our findings from fixed-effects specifications (Baltagi, 1995). However, future research should explicitly consider the influences of various environmental characteristics in examining the vertical fit of HR systems.

Second, our data did not allow us to examine the intervening knowledge-based mechanisms related to the effects of an HPWS. This omission is mitigated by prior research, which has demonstrated support

for the benefits of an HPWS in supporting organizations' knowledge-centered activities (Chang et al., 2014; Collins & Smith, 2006). Relatedly, it is possible that there are other theoretical mechanisms—such as organizational flexibility (Wright & Snell, 1998: 758)—through which an HPWS supports the requirements of different entry timing modes. For instance, research has suggested that an HPWS can increase organizational flexibility by broadening workforce competencies and fostering employees' discretionary behaviors in addition to their narrow, task-related contributions (Evans & Davis, 2005; Hong, Liao, Raub, & Han, 2016). High levels of organizational flexibility are thought to play more important roles for early market entrants (vs. fence sitters) because these actors pursue fast responses to early market signals or first-mover products. Thus, future research attention directed toward understanding additional mechanisms that explain the alignment between HR systems and entry timing modes is needed.

Third, we note a few measurement issues. The HPWS and market entry timing mode variables were measured by a single rater, though it seems likely that participating organizations would seek the most knowledgeable manager to complete the survey because this information was requested by the Korean government (Jung & Kim, 2016; Kim & Kang, 2013). Further, measurement error in the HPWS and entry timing data due to the use of a single rater would make it harder to detect the predicted effects by attenuating the relationship among variables, thus rendering our study a more conservative test of the dual-alignment effects that we examined (Gerhart, Wright, McMahan, & Snell, 2000; Siemsen, Roth, & Oliveira, 2010). In addition, we had to use binary responses for many of the HR practice items, although this is not uncommon in existing SHRM research (e.g., Kehoe & Wright, 2013; Shin & Konrad, 2017). As such, we were unable to capture nuances of how HR practices were applied (e.g., percentage of employees covered by training programs; percentage of incentive pay compared to total compensation). Thus, future research may benefit from the use of more objective data on HR and strategy-related variables, or survey measures with more detailed response scales, to more accurately gauge the effects of an HPWS.

Finally, given that we focused on a single type of HR system (i.e., HPWS) and found its performance effects only among fast followers, it would be informative to examine other types of HR systems and show how they interact with other market entry timing modes. For example, Collins and Kehoe (2017) examined the vertical fit between three different kinds of HR systems (i.e., engineering, commitment, and bureaucratic) and two generic innovation strategies (i.e., exploration focusing on new product development and exploitation focusing on current product improvement) within software organizations. They found that engineering, but not commitment, HR systems interacted with exploration innovation strategy toward higher profitability. Although their study did not examine entry timing modes per se, their results suggest the possible presence of alternative, less frequently examined HR systems that may fit different entry timing modes.

CONCLUSION

Integrating market entry timing research and SHRM scholarship, we proposed and found that the effects of an HPWS on an organization's performance are contingent upon its alignment with an organization's market entry timing mode, such that product sales and financial benefits associated with an HPWS are greater for organizations that adopt fast-follower, rather than first-mover or fence-sitter, entry timing. This effect was even stronger among organizations that achieved strong horizontal fit in the form of high internal consistency in the implementation of HR practices across the AMO domains. Our results extend existing SHRM scholarship by offering insights into the precise nature of the interplay between vertical fit and horizontal fit in explaining the effectiveness of HR systems in supporting organizational performance. Put another way, our study provides unique evidence for the idea that organizations may increase their sales and financial performance by implementing HR systems that comprehensively enhance employees' abilities, motivation, *and* opportunities to make contributions that are closely aligned with an organization's strategic goals. Future research would benefit from validating this idea in relation to various strategic goals and needs and alternative types of HR systems of the organization.

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The authors honor and pay tribute to his legacy in the field of strategic human resource management. He will be forever remembered, and forever missed.

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APPENDIX A

ROBUSTNESS CHECK

We examined the robustness of our findings in the following three ways. First, although we had both conceptual and empirical reasons for our use of the industry mean in our standardization of the HR practices within the HPWS, we reran our analyses of the effects of the HPWS using the grand mean of the entire sample in the standardization of the HR practices. Second, our entry timing measure included a "none of the above" option in addition to the three entry timing modes (i.e., first-mover, fast-follower, and fence-sitter modes), which was already included in our analytic models as a control variable. Although not hypothesized, we explored the models after controlling for the two-way and three-way interactive effects of other entry timing with an HPWS, and HPWS internal consistency. Moreover, establishments in this other entry timing category could have had unique modes that were not captured by our three distinct modes of entry timing, but that could potentially influence our findings. Therefore, we examined the models without the 342 observations in the "none of the above" category. Third, although we used a range of control variables based on prior research, we noted that some of the correlations between them were rather large. Thus, as has been done in other research (Oh et al., 2015; Spector & Brannick, 2011), we explored the models without any control variables. As part of this effort, we also tested a model that included all of our study controls with the exception of workforce size (i.e., total number of employees), given that workforce size is already reflected in our product sales measure. In all of these auxiliary analyses, the direction and significance of effects were practically consistent with the results from the focal analyses reported in this study, indicating the robustness of our findings. Detailed results are available from the first author upon request.