

Practice Co-evolution: Collaboratively Embedding Artificial Intelligence in Retail

Practices

Abstract

Many retailers invest in artificial intelligence (AI) to improve operational efficiency or enhance customer experience. However, AI often disrupts employees' ways of working causing them to resist change, thus threatening the successful embedding and sustained usage of the technology. Using a longitudinal, multi-site ethnographic approach combining 74 stakeholder interviews and 14 on-site retail observations over a 5-year period, this article examines how employees' practices change when retailers invest in AI. *Practice co-evolution* is identified as the process that undergirds successful AI integration and enables retail employees' sustained usage of AI. Unlike product or practice diffusion, which may be organic or fortuitous, practice co-evolution is an orchestrated, collaborative process in which a practice is co-envisioned, co-adapted, and co-(re)aligned. To be sustained, practice co-evolution must be recursive and enabled via intentional knowledge transfers. This empirically-derived recursive phasic model provides a roadmap for successful retail AI embedding, and fruitful future research avenues.

Keywords: practice co-evolution, practice enablement, artificial intelligence (AI), retail, practice theories, knowledge transfer

Introduction

Innovation is the new normal. The global pandemic has inspired many organizations to rapidly accelerate investments in artificial intelligence (AI) to enhance their manufacturing, logistics, and customer management capabilities. According to a PwC's recent survey, 86% of business leaders agreed that AI is becoming a strategic imperative, and 67% expect to invest more in AI in the future (McKendrick 2021). These investments are predicted to increase global economic output by \$13 trillion by 2029 (Fuhrman and Mooney 2021). In retail, AI applications are increasingly used to augment customer experiences (e.g., smart mirrors, augmented reality phone apps, metaverse adventures) and the efficiency of retail operations (e.g., self-service checkouts, employee handheld devices, smart inventory systems) (Guha et al. 2021; Huang and Rust 2018, 2021; Puntoni et al. 2021; see Table 1). Furthermore, applications such as AI-assisted data processing have allowed retailers to quickly pivot from physical retail spaces to digital channels in response to global COVID-19 lockdowns and restrictions (Hong 2021). However, although AI has been successfully implemented in some cases (e.g., Braganza et al. 2021; Davenport et al. 2020; Park et al. 2021), many retailers struggle to maintain momentum following an initial AI investment hype and encounter resistance to change among their employees (Dua et al. 2020; Iansiti and Lakhani 2020). Reflecting the growing importance of AI investments, this article investigates the conditions that enable retailers to successfully embed AI and their employees' sustained usage of the technology in the long run.

[Insert Table 1 about here]

While traditional innovation diffusion models (e.g., Davis 1989; Moore and Benbasat 1991; Rogers 1983; Venkatesh and Davis 2000) provide insight into the factors and conditions involved in technology adoption decisions, for the most part, these models and the empirical research that adopts them remain silent on the execution of implementation strategies that lead to employee sustained usage of the technology (see Table 2). Therefore, given the strategic role of AI and the size of the investments required to implement it effectively, managers and researchers need new models that identify and examine factors important for the successful embedding of this technology. Furthermore,

these models must account for the critical role that employees might play in contributing to the sustained usage of AI technologies to achieve the expected return on investment.

[Insert Table 2 about here]

To elucidate these complex processes, this article examines how AI is embedded in retail employees' ways of working, or their practices. Building on theories of practice originating from Bourdieu (1977) and Garfinkel and Sachs (1970) that situate mundane activities as important social acts, this article takes retail practices as the units of analysis, critically interrogating practice change caused by AI investments within formal organizations. The article utilizes practice theories to reveal how practice participants (those who perform a practice, such as store employees) and *practice champions* (those who intentionally disseminate a practice, such as senior executives, local retail managers, and trainers; Dilling et al. 2013) introduce AI into the retail environment and foster its effective, long-term usage by embedding it into existing ways of working. Retail practices are assumed not to be uniformly adopted across employee cohorts, but rather to have "careers" (Shove et al. 2012), or idiosyncratic trajectories that arise from differences in understanding and competence that compel adaptation and innovation (Akaka et al. 2022). This article shows that employee responses to the introduction of AI (e.g., inertia, misperceived enablement, efforts to use AI adroitly) are dependent on employees' collaborative efforts to change existing practices and shape new ones.

Using a longitudinal, ethnographic approach that combines 74 stakeholder interviews involving retailers, business consultants, and technology providers with 14 on-site retail observations over a 5-year period, this article elucidates how the implementation of AI shocks and modifies existing retail practices. By tracing how these practices change, this article identifies the process that leads to the successful embedding and sustained usage of AI in retail, thus offering two substantive contributions. First, at the practice level, recognizing the dynamic nature of practices (e.g., Jarzabkowski and Bednarek 2018; Thomas et al. 2020), we identify *practice co-evolution* as a collaborative process of transferring, improving, and modifying practices among practice participants. While prior research on practice theoretics shows that practices diffuse and change over time (e.g., Akaka et al. 2022; Godfrey et al. 2021), this literature does not directly examine how the

interaction between the different practice participants shapes practice change, nor does it recognize the importance of collaborative efforts between practice champions and participants. Addressing this gap, this article reveals an orchestrated, collaborative, multi-stakeholder process that allows for intentional sustained practice change. The data reveal that practice co-evolution occurs in three phases consisting of *co-envisioning* how the proposed practice modification achieves organizational goals, *co-adapting* the co-envisioned practice to suit local retail conditions or context, and *co-(re)aligning* the co-adapted practice to ensure that organizational goals are achieved. The data further indicate that practice co-evolution is recursive as co-(re)aligned practices often become newly co-envisioned practices. Retail practice co-evolution should thus be viewed as a collaborative process to ensure that AI investments produce organizational benefits as employees become active partners in modifying their routines.

Second, at the practice participant level, this article identifies a mechanism that facilitates practice co-evolution termed here as *practice enablement*. Practice enablement is the result of intentional transfers and acquisitions of core (i.e., know-what, know-how, and know-why) and contextual (i.e., know-where, know-who, know-when) knowledge among practice participants that allow changes in the meanings, competences, or materialities (i.e., practice elements) of routines. While the extant practice literature broadly identifies practices as the site of organizational knowing (e.g., Nicolini 2011), it remains silent about the mechanisms through which knowledge is embedded in a practice and transferred between participants. This research shows, for the first time, how these knowledge transfers unfold into organizational practices, leading to practice enablement. Our data show that retail employees' practices are disrupted by the initial AI embedding, as the materialities of their work are modified, thus requiring the acquisition of new competences through knowledge transfer that is supported by the reframing of practice meanings. Moreover, retail employees are more willing to accept AI if it is introduced as a method of simplifying their workflow, reducing menial tasks, or enhancing job satisfaction. Findings further demonstrate that practice enablement can foster the successful and sustained use of AI among employees, which leads to the practice spreading to other employees.

Background

Practices and practice elements

A practice is “a routinized type of behavior which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, ‘things,’ and their use” (Reckwitz 2002, p. 249). Practices are embedded within particular social structures and are connected with other practices that constitute those structures (Schatzki 2019; Shove et al. 2012). Practices support and enable market-mediated experiences (Seregina and Weijo 2017), impact organizational ambidexterity (Kietzmann et al. 2013), establish habits or routines (Phipps and Ozanne 2017), influence identity (Akaka and Schau 2019), shift existing markets (Godfrey et al. 2021), create new markets (Akaka et al. 2022), and shape social structures (Giddens 1984). Thus, practices impact organizations by influencing how individuals interact with each other and perform activities (Reckwitz 2002). There are two categories of practices: dispersed and integrative (Schatzki 1996, p. 91). Dispersed practices are relatively simple, discrete practices that carry their own meanings, materialities, and competences. They are often bundled and woven together to form more complex, *integrative practices* such as retailing, which consists of many dispersed practices including, for example, product or service curation, merchandizing, promoting, personal selling, value exchange, sales tracking, trend forecasting, and customer relationship management (Chen et al. 2009).

Practices are the interaction of three elements: materialities, competences, and meanings (Shove et al. 2012). *Materialities* are tangible facets like objects or technologies used within practices. *Competences* are the skills required to perform a practice. *Meanings* are cognitive associations that undergird the practice with rationales for, and conditions under which, practices are performed. Within retailing, practices require context-specific materialities (e.g., operating systems that allow retail employees to manage stock effectively and efficiently), competences (e.g., how to optimize in-store merchandising to maximize sales), and meanings (e.g., satisfaction in providing high-standard customer service) that retail employees learn to combine to perform the integrative retailing practice (Shove et al. 2012).

Extant market-oriented research employing practice theories emphasizes both the continuity and fragility of practices (e.g., Epp et al. 2014; Phipps and Ozanne 2017; Schau et al. 2009; Thomas et al. 2013) most often in organic settings, outside formal organizations and their highly orchestrated strategic efforts. Furthermore, empirical research into technology adoption has primarily focused on execution processes that often involve the modification of practices to suit local conditions instead of comprehensively investigating the entire adoption process and its impact on the practice elements (see Table 3). Moreover, this literature is largely silent on how practices change over time and evolve to incorporate sustained usage of innovations.

[Insert Table 3 about here]

Beyond serendipitous practice diffusion

As with all practices, retail practices become routine and are difficult to change (Fuentes et al. 2019). However, these practices often require change as competitive pressures force firms to create new strategies and adopt novel technologies, thus requiring employees to adjust their workflows (Day and Schoemaker 2020). While often implemented to meet organizational goals or regulatory oversight rules (Guha et al. 2021; Hong 2021), AI technologies are likely to disrupt established retail practices. For example, in response to the health risks associated with COVID-19, many retailers sought to encourage social distancing and limit physical contact by implementing AI-powered systems that automatically restrict the number of customers in a store through entry door control. This required retail employees to modify or adopt new customer service practices to increase safety by incorporating AI applications into their practices.

Disruptions of established practices, therefore, require practice participants to innovate their established routines. However, the practice literature does not clearly articulate how practices change over time. Furthermore, previous studies of practice change typically focus on studying practices from either a micro (e.g., Thomas and Epp 2019), idiocultural (Fine 1979) perspective, or a macro, socio-cultural perspective (e.g., Akaka et al. 2022). In the micro context of parenthood, Thomas and Epp (2019) show that even when parents have given considerable forethought and intend to adopt specific child-raising practices, unforeseen but ultimately insurmountable misalignments related to

other practices (e.g., work, social, community) undermine the best laid plans that individuals make. Meanwhile, from a macro perspective, Akaka et al. (2022) contest the dominant macro (sales) conceptualization of adoption by addressing practice diffusion, which they define as the competent deployment of materiality toward a common understanding of use. Their work traces the largely organic, ad hoc movement of practice elements to demonstrate that practices (re)emerge across complex sociocultural landscapes through a calculus of alignments within the diffused practice and other related or impacted practices. While there is some understanding of how practices diffuse serendipitously, the marketing literature is largely silent on the deliberate orchestrated movement of practice elements within organizations toward specific competitive outcomes. There is, therefore, a need to delineate how practices evolve through change, and to identify the conditions that support this evolution. Against this background, this article investigates how AI becomes embedded within practices following intentional orchestrated changes in retail routines to achieve strategic goals.

Research Design

Introducing technology into an existing practice is a complex endeavor that involves understanding the organization from the perspectives of the individuals involved (Uduma and Sylva 2015). Reflecting this complexity, the strategic objectives, implementation processes, and the relationships between technology, people, and organizations are not separated in the research design but are assumed to interact and influence each other (Orlikowski and Baroudi 1991). A qualitative approach permits the exploration of the phenomenon in question from the perspectives of the actors under investigation (practitioners), taking into consideration the different experiences and social contexts of the participants (Cronjé and Burger 2006).

To gain a richer and more comprehensive understanding of AI's influence on retail practices, this research utilizes a longitudinal, multi-sited ethnographic approach (Marcus 1995) combining one-on-one and group interviews with on-site retail observations across 14 retail firms. The first author is highly engaged in the field side (emic) while the remaining three authors have analytical distance (etic) as academic researchers. The unit of analysis is an integrative practice, retailing, comprised of many dispersed practices (Schatzki 1996: 91). The focal phenomenon is AI embedding

and sustained usage within existing retail practices. To investigate this phenomenon, data was collected for over five years capturing the strategic motivations for AI investments, the planning for AI integration, the initial implementation, and the continuous evaluation and modifications that undergird its sustained usage by employees. The design of this research is consistent with longitudinal ethnographic research used to examine the incorporation of technology into existing practices (Barley 1990) and includes “ethnographic returning” where researchers return to the field site over time to capture social actors’ reflexive insights about a social practice over time (O’Reilly 2010).

Sampling strategy

Aiming to examine the complexity of AI technologies inclusion and sustained integration within existing retail practices from multiple perspectives, this research combines viewpoints from three key stakeholder groups: (1) executives and managers of retailers across Head Office level and store level, (2) technology providers, and (3) business consultants (see Table 4). While the retailers provide organization-specific insights on strategic decision-making and contextual implementation issues, technology providers and business consultants shed light on cross-organizational challenges and bottlenecks.

Our focus was on multiple retailers operating in the fashion sector. In recent years, the sector has witnessed significant investment in both customer- and employee-facing technological innovations (Bonetti et al. 2017; Silva and Bonetti 2021). As such, the fashion sector represented the ideal research context for this empirical investigation. The primary criterion for selecting retailers was evidence of recent implementation of at least one type of AI technology at the time of the data collection. To capture the sector’s diversity, we sampled retailers with various market positionings, from fast fashion to sportswear to lower premium to luxury fashion (see Web Appendix, Table A1). Multiple technology providers and business consultants were selected based on their track record of offering services or expert advice to fashion retailers on the AI issues investigated in the study (see Web Appendix, Table A2).

[Insert Table 4 about here]

Data Sources

Interviews. Data include semi-structured interviews with 74 informants comprising 46 head-office executives and senior store managers across 14 global fashion retailers, 13 senior technology providers, and 15 senior business consultants involved in technology implementation projects. Within retailers, informants for fieldwork interviews included both Head Office level and store level employees. The former perspective allowed investigating strategic reasons and complexities of AI implementation decisions, while the latter allowed understanding the store level's perception of the processes involved in AI embedding into existing practices (see Table 4). Store level informants acted as representatives of store level employees since they operate at store level and, for the most part, come from store employee level. Selecting people at similar levels or roles within retailers was not always possible due to different organizational structures, role interpretation, and varying familiarity with AI.

The initial interviews took place between June 2017 and January 2018 and were mainly face-to-face following an extensive interview protocol of questions. While the initial interview protocol design was informed by key themes emerged from the literature, it included several grand-tour questions to uncover novel, unexpected insights, and allow informants to elaborate on emerging themes (see Web Appendix, Table A3). Each initial interview lasted, on average, 60 minutes (minimum 45, maximum 120) resulting in over 66 hours transcribed verbatim accompanied by extensive field notes.

As part of 'ethnographic returning' (Ellis 1995), between two and seven data collection points were conducted for each retailer over time (2017-2022) to gain insights into the phenomenon investigated, and to compare and contrast interviewees' perspectives on issues related to processes of sustaining AI integration into retail practices. These interviews ranged from 45 to 90 minutes (with some peaks of 120 minutes, with an average duration of 60 minutes), and usually took place via phone or videoconferencing. These interviews were supplemented by one to ten email exchanges for each retailer related to content clarification or updates.

Field Observations. The first author conducted over 40 hours of observations of the 14 retail firms' commercial retail spaces hosting AI technologies. The observations took place across multiple sites associated with each retailer and across stores in different countries. This approach allowed observing differences between retail store formats. These observations were supplemented by in situ interviews conducted across temporal moments in the AI adoption process. This longitudinal approach allows for deeper processual insights compared to data captured in a single moment. Store-level personnel and, where possible, head-office staff guided the first author through the stores to demonstrate the various AI-enabled features available in the retail space. Combining interviews and observations exposed a greater breadth of contextual insights on the effects of embedding AI into retail practices.

Analytical Approach

The interview data were analyzed inductively through several rounds of thematic analysis that involved conducting a back-and-forth examination of theory and empirical findings, and continuously revising coding labels as the data collection proceeded (Miles et al. 2014). The analysis began with individual informants' perspectives. Then, shifting to an organization-level perspective, emerging patterns across different retailers, business consultants, and technology providers were compared and contrasted to identify common practice trajectories, inconsistencies, or opposing views. This second stage allowed the authors to uncover more intricate patterns and themes (Eisenhardt 1989).

This rigorous interpretive process continued until the point of saturation where no new themes emerged from the analysis (McCracken 1988; Qu and Dumay 2011). Member checks were conducted with eight retailers, three technology providers, and five business consultants by discussing preliminary results, and running workshops on the managerial relevance of emergent findings (Thomas 2017). This ongoing dialogue resulted in additional reflections (O'Reilly 2012) and insights supporting the interpretative validity of the findings.

Findings

The findings show *practice co-evolution* as an orchestrated, collaborative, and dynamic process. This co-evolution process occurs across three phases, namely, co-envisioning, co-adapting,

and co-(re)aligning. Furthermore, transitioning from a practice-level to a practice practitioner-level perspective, the data analysis shows that the changes in practices brought on by practice co-evolution are facilitated by *practice enablement*. Practice enablement consists of the transfers of different types of core (know-what, know-how, and know-why) and contextual (know-where, know-who, know-when) knowledge that affect different practice materialities, competencies, and meanings. In this section, we first unpack practice co-evolution and its phases at the practice level, and then look to the practice participant-level to investigate the knowledge transfers that result in practice enablement.

Exploring practice co-evolution

The findings reveal that retail practices must continually evolve in the face of competitive forces by embedding innovations, such as AI investments, into new or augmented routines. For instance, consider these exemplar quotes that showcase this central idea:

There's a lot of change constantly happening, anything including new tech as well as with the general way that the company is working. And anybody can bring up ideas, any time. So, if all of a sudden it feels like we need to change things, then we start changing. (Retailer 8, Senior Executive)

Essentially, [our AI inventory system] is an enabler for many other things in the future... it's an enabler because as you layer in more technology, your stock records are much easier to connect into all of that, so it kind of creates this layer or a foundation that you can then build many other things on top of ... as a business we have always been driven by opportunity... we always run work in groups that deliver change, so it's a cross-functional working group, in essence, so we have enough capabilities to set clear priorities and continue to adapt to that. (Retailer 10, Customer Director)

In contrast to existing literature that focuses on serendipitous practice diffusion (e.g., Akaka et al. 2022), these quotes reveal that retail practices temporally evolved through orchestrated, collaborative, and dynamic processes. We term this process *practice co-evolution* as it both defines and details how practices change and diffuse over time. The data analysis indicates that successful changes to retail practices require continuous collaborative efforts across and between practice participants and practice champions (e.g., internal/external trainers, employees, managers) that are responsible for communicating and disseminating practice change. This leads to continuous cycles of practice co-evolution. Moreover, changes in practices do not happen in one training interaction or through an

isolated policy communication. Instead, changes require a temporal dimension that involves complex, phasic, and recursive phenomena as the practice co-evolves.

As illustrated in Figure 1, data analysis reveals that practice co-evolution takes place over time across three distinct phases: co-envisioning, co-adapting, and co-(re)aligning. These phases indicate that retail practices co-evolve as co-envisioned practices are co-adapted to fit within existing local practices leading to co-(re)alignment of these practices that inspires newly co-envisioned practices; hence, practice co-evolution is a recursive process. Each of these phases will be empirically examined in the following sub-sections.

[Insert Figure 1 about here]

Practice Co-evolution Phase I: Co-envisioning. Retailers typically face intensive competition necessitating the need to improve their customer experience and operational efficiency through AI, as the following two quotes indicate:

[Our stores] have digital screens in-store to communicate the latest campaigns. We see through all our social activations that video content is much more engaging, and we're able to tell so many stories and show so much content. We also have various pop-up activations such as smart mirrors. (Retailer 2, Senior Marketing Manager)

We have an app that is the hub where the sales associate goes to be very efficient on customer-facing aspects of their job. If you think about the journey, you visit a store and spend a lot of time with your sales associate, there is a time where we want to start cultivating you. So, it's not just about that visit but how do we call you back etcetera. (Retailer 11, VP, Customer Analytics, Customer Insight)

Both quotes demonstrate retailers' strategic motivations for innovative solutions powered by AI to increase their competitiveness. Retailer 2 uses AI to construct ephemeral and experiential promotions that, as evidenced through observations, their customers perceive as innovative, entertaining, and engaging. Retailer 11 employs AI to aid employees accomplish tasks efficiently (i.e., reduced manual jobs), thus improving customer relationships (i.e., increased personalized interactions). However, for both strategic motivations, the success of AI implementations relies on collaborative envisioning, or co-envisioning.

Co-envisioning refers to cross-functional planning for how practice changes will be incorporated into existing practices and later applied by individual practice participants (i.e.,

employees, teams within retail stores, and the entire organization). Consider Retailer 12's collaborative efforts starting from co-envisioning:

When we first designed the apps we took two of our colleagues in the office for a couple of weeks to help us design all this stuff like: "How do you currently use it? What will you be doing? How will you be scanning? What are you used to pressing?" So, when we rolled this out, we never trained anyone, we just said "Hey yeah let's start using this." I think we try and stay as close as possible to our colleagues' feedback, so that that can help because otherwise, you have some guys sitting in IT who's designing it saying: "Well it has to have this button and this button". (Retailer 12, Product Owner – Retail Technology Manager)

Retailer 12 co-envisioning the introduction of AI by listening to and involving store employees who will use it daily, as opposed to others outside the store context. This co-envisioning involves a set of discussions and observations that seek to understand existing practices and engage practice participants in designing local adaptations. Furthermore, practice co-envisioning requires the identification of potential barriers to practice evolution that could lead to the design of AI applications that do not address practice participants' specific needs when completing everyday tasks. In doing this, Retailer 12's AI investment should offer clear value to practice participants without the organization having to resort to expensive and time-consuming training programs.

Key to this co-envisioning phase is enrolling practice participants into a shared strategic vision and inspiring some participants to become champions of the practice change. Practice champions can come from any organizational level. They can be store managers, as in the case of Retailer 1, where field observations show that one of their managers actively embraced the new AI, recognizing the benefits to customers and employees. This practice champion shared her knowledge of how to operate the technology with her peers, thus motivating other practice participants to adopt the technology. Relatedly, to further incentivize collaboration between practice champions and participants, retailer 2's VP of European Stores and Operations describes creating a formal peer ambassador program to facilitate knowledge transfer and technology adoption:

We create internal peer ambassadors for whatever the system is. So, we try to create success stories. I don't want to tell everybody in Europe that this is good, let the person that they respect tell everybody it's good, because it's going to be much more contagious and better adopted. And also, let her train them and show what she did to her business.

This senior executive went on to explain that any organizational member with a success story about the new AI is welcome to share them and act as a practice champion, motivating their peers and rendering the practice change meaningful and credible. These peer endorsements are credible as other practice participants tend to trust and respect their peers more than head office staff. Findings show that practice champions can emerge at any phase as they become enrolled in the meaning, have the competence, and work with the new materialities.

Conversely, Retailer 1 shows the case when envisioning does not take place in a collaborative way leading to a more top-down approach:

In this store, every innovation happened all of a sudden and all together. [My employees and I] always heard about it from the Retail Supervisor: “Be ready. Things are going to change. Be ready for new ways of stocking products and managing product pick up.” So, I was telling [my employees] all this. The Retail Supervisor sent me and some of [my employees] to see this technology in other stores. However, overall, it hasn’t been easy, as we went from day to night having *everything* changed. So, we have to get used to re-stocking items in a different way, to deal with customers in a different way... and it all came at once. We feel a bit under pressure, as it’s like starting to work in a different place. I have been working here for 12 years, but when we re-opened, I was like: “I am struggling a bit. I don’t understand anything anymore.” (Retailer 1, Store Manager)

As these comments reveal, local employees were not involved in planning how to embed this AI. This lack of engagement resulted in a radically changed workplace that left employees disoriented with disrupted routines with which they are struggling to cope. To ensure practice participants’ engagement, other retailers in the study opened up discursive channels – multi-lateral communication exchanges – to facilitate collaborative efforts in co-envisioning how AI should be implemented and to deal with any barriers arising during this process. This approach led to store employees feeling more prepared for embedding a change in their daily routines. Therefore, practice co-envisioning must reflect practice participants’ diverse operational needs and ideas for future task improvement, as highlighted by Retailer 2:

If it’s pushed by an office person or an IT person who’s never worked in a store it’s never going to work. It’s the collaboration across functions to prioritize and design and be very involved in the specs of the functionality. It’s hand in hand all the way through the development, then usually we would find a couple of those original people to also test. (Retailer 2, VP European Stores and Operations)

This senior executive argues that collaboratively envisioning a new materiality with practice participants entails being responsive to practice participants' needs to stimulate early buy-in and successful collaborative practice change in the long run. The executive's argument is echoed during store observations by many employees, who show appreciation for their direct involvement in new technology implementation and subsequent embedding into their practices.

Practice Co-evolution Phase II: Co-adapting. The empirical findings show that the co-envisioned practice is collaboratively adapted to aid the successful AI implementation by reflecting local contexts and conditions. This is evidenced during store observations, where practice participants' characteristics lead practice champions to suggest collaborative ways to adapt the AI into existing practices, thus enabling the co-envisioned practice. For example, when Retailer 4 invested in portable tablets to increase efficiency, one of their store managers reacted: "Oh God! This will complicate our daily tasks". To cope with less than receptive responses such as this, practice champions worked collaboratively with practice participants who were not very comfortable with this new technology to adjust the planned routine change. The opening of discursive channels led to a co-adapted practice in which practice participants processed part of their task in a way that they were used to (i.e., their existing practice), yet also let them experience the usefulness of this new portable interface (i.e., reduced menial work).

Co-adaption involves continuous collaborative efforts between practice champions and practice participants. Practice champions are guided by their knowledge of existing practices and expectations of the improvements that AI embedding into retailing practices could bring to those practices. Practice participants' co-adaption efforts are shaped by their lived experiences and understanding of organizational values, the acquisition of the knowledge needed, and by their loyalty towards the company. For instance, Retailer 1's Store Manager acts as a practice champion helping to collaboratively adapt the practice change:

Initially [store employees] are a bit reluctant about [the new AI technology], but with the help of their supervisors and with several efforts from my side, we try to implement all technologies that HQ gives us. It really requires a huge effort. (Retailer 1, Store Manager)

In this case, AI is implemented without cross-functional collaboration leading to practice participants that are less receptive and may actively resist changes to their existing routines. The manager's comments reveal that, in their lived experience, AI embedding into retail practice is a painful process requiring substantial collaborative effort from store managers, supervisors, and employees.

Significant adjustments are, therefore, required, due to missed collaborative efforts when envisioning the role of AI in the local context. Practice change is formulated here at the executive level and then imposed on local practice champions and practice participants in retail stores. Missed collaborative efforts can lead to unintended adaptations of the modified practice, as the same Retailer 1 Store

Manager continues explaining:

We have many staff members... who are not tech savvy [and] tend to be stronger at building relationships with customers... There was one... saying "How do I do this?" [*with irony*]. I told her, "Don't worry, you deal with other stuff. You approach [the] customer and take them to the dedicated person who makes all sales for you." (Retailer 1, Store Manager)

Here, the practice champion's deep understanding of their employees' skills enabled them to adapt how AI is used within their store to suit different employees instead of fully adopting the head office's directive. During store observations, several employees emphasize the importance of creative adaptation of their daily tasks that departs from corporate guidance. The level of implementation variation can therefore be reduced by including local retail floor practice participants at an early stage of the practice change. Still, we found that practices are co-adapted across cohorts of practice participants in different ways due to their characteristics, values, or understandings. However, findings show that poorly implemented practices can lead to practice champions' disillusionment and defection. This emerged from Retailer 6 Operations Brand Manager & Talent Management Store Management, who seemed very skeptical about AI integrations in-store. He referred to AI investments as "those bits, the added extras" sarcastically describing them as "fireworks moments," reflecting his view that the investments required additional employee effort without any payoff in terms of operational efficiency or attracting additional business.

Beyond collaboration led by internal practice champions, successful co-adoption of practice change often requires external practice champions as knowledgeable experts working in partnership with retailers. As Business Consultant 12 remarks:

You need to understand the drivers of the technology adoption. Why would anyone want to use this, because that's the point. I can't just push it, I need to create the need. I need to create the need from the customer and the need from the associate, or show them very clearly, what is in there for them. And in order to do this, you do need an outsider every now and then to just shuffle that all and open up a new perspective. A consultant is a provocateur sometimes to see things in a different way. I am a catalyst of change, or innovation. I don't do the innovation myself, but I am leading the change. (Business Consultant 12, Managing Director)

These comments show that the expertise of external champions could greatly assist retailers' efforts to embed AI into stores. Findings indicate that their role involves understanding existing practices, identifying potential barriers, and catalyzing change due to their industry experience and exposure to many different local contexts. As such, business consultants can enable discursive channels that help decision-makers implement a broader range of strategic and operational issues when embedding AI into an existing practice.

Practice Co-evolution Phase III: Co-(re)aligning. Co-(re)aligning concerns collaboratively adjusting, rebalancing, or revolving the practice initially co-envisaged (Phase I) to reflect the reality of locally adapted practices (Phase II). This phase is critical as retail practices require continuous collaborative adjustments, reorientations, and calibrations to achieve integrative practice co-(re)alignment due to their complex nature. The data analysis shows that co-(re)alignment is essential to achieve sustained use of AI that produces the desired integrative practice outcomes. Co-(re)alignment involves collaboratively re-imagining local adaptations between practice champions and practice participants to ensure that the practice develops across local retail floor conditions with little unanticipated variation. When retailers do not plan practice co-(re)alignment carefully with the involved practice participants, practice instability often emerges. This leads to overall missed adoption and misalignment of the modified practice, as this quote illuminates:

It has been complex to get staff members to understand the importance of collecting customer data for years. That has been a cultural obstacle, and it is something that we are still constantly working on...That's the foundation of everything, without data gathering we can't do anything in terms of customer communication and interaction (Retailer 14, Group Head of CRM and Retail Digital Transformation Projects).

This comment evidences the need to collaboratively (re)align the dispersed practices (i.e., using customer data to enhance customer communication, improve inventory management, and strengthen employee-customer interaction) within the retail organization and stabilize the integrative practice (i.e., customer data management). When this co-(re)alignment is not achieved, practices become weak and potentially fail, as illustrated by this quote:

It was all new for me as well, so I had to go [to the store] and encourage staff not to give up using the AI app. It was very hard then because when I was visiting the store, I found some dusty iPads hidden away in an office drawer and not being used at all. That's sort of what we did here with those [AI] tools that allow customers to pay anywhere in the store, but they were never working. We tried over and over again. We were told to use them, but we could not use them on a busy Saturday, as if any problem would come with a customer's payment, you wouldn't know whether the payment went through or not. So, we stopped using the app. (Retailer 1, Retail Supervisor)

This account shows that the misalignment of the dispersed practice negatively affected the ability of participants to enact the integrative practice (i.e., payment processing), leading to its abandonment due to an unresolvable exogenous factor (i.e., the AI technology was not working).

Findings delineate the critical role of collaborating throughout the whole process of practice co-(re)alignment to successfully achieve the strategic outcomes of the integrative practice. For instance, Retailer 12 stresses the importance of spending time in store to understand practice participants' genuine concerns regarding the introduction of AI and collect feedback useful to co-(re)align and enable the local adaptations:

It's also not so much, certainly in my world, about asking the Store Managers about their feedback on the usage of things [new AI technology] because they're not the guys that use it, but what I'll do is go and spend a lot of time with the guys on the floor here. And I think we've got a history in our business of people in suits coming into stores and saying "Right we're giving you this trial, how do you like it?" and everybody is so desperate to impress that they're like "Yeah it's brilliant, it's brilliant" but actually when I come in my jeans and say "Hey what did you think of this?" they're just like "Oh this is just rubbish" and I'm like "That's what I need to hear because we can fix all this stuff." (Retailer 12, Product Owner - Retail Technology)

This manager stresses the importance of listening to various practice participants across Head Office and store level and of working with store-level employees to embed the new AI into their existing practices. Practice participants who are ultimately using the AI technology should actively participate in its co-adapting and co-(re)alignment. Here, co-adapting and co-(re)alignment emerge to be crucial

for successful practice co-evolution. Collaborative efforts are key for successful co-(re)alignment of the practice, allowing all practice practitioners to (re)align AI implementations to their requirements in order to realize orchestrated strategic decisions, and achieve and maintain practice participants' task satisfaction, job performance, and security.

Overall, the empirical findings show that collaboration is crucial across all phases of practice co-evolution. While these findings examine change from the practice-level perspective, they do not shed light on how individual practice participants incorporate practice changes. Therefore, the following section examines practice co-evolution from this individual perspective, with a particular focus on knowledge transfer as a key enabler for practice co-evolution.

Practice Co-Evolution via Practice Enablement

Examining practice co-evolution at the practice participant level, the findings reveal an important mechanism that involves knowledge transfers that enable these individuals to enact the modified practice, termed here as *practice enablement*. Practice enablement refers to the process of transferring knowledge to equip practice participants with the information needed to implement the practice change driven by AI implementation. Practice enablement triggers sustained practice change at the individual level leading to the spread of the practice change to other practice participants.

The data show that distinct types of core knowledge are necessary to enable different practice elements and allow the practice to succeed. The knowledge transfer literature (e.g., Garud 1997; Hulme 2014; Lundvall and Johnson 1994) provides a useful lexicon to describe these types of knowledge, namely, know-what, know-how, and the know-why. *Know-what knowledge* accounts for knowing what-to-use-when. *Know-how knowledge* not only entails learning through task accomplishment, but also being able to solve emergent use-related complexities when context-specific knowledge does not exist. *Know-why knowledge* defines the reasons certain activities are important.

Furthermore, our analysis of the data shows that contextual knowledge (i.e., know-who, know-where, and know-when knowledge: Lundvall and Johnson 1994) positively influences practice enablement. Specifically, *know-who* concerns the knowledge of which practice participants are

responsible for integrating AI into existing practices, *know-where* indicates knowledge of the environment where the practice change is enacted, and *know-when* concerns knowing the timing when the practice change is enacted.

While knowledge has been theorized as central to practices and practice changes (e.g., Nicolini 2011), the current study is the first to delineate how different types of knowledge are needed to enable practice materialities, competences, and meanings, as well as further outlining contextual types of knowledge that contribute to the success of the practice. Accordingly, the following subsections unpack core knowledge transfers affecting the different practice elements and examine the role of contextual knowledge in relation to practice enablement and co-evolution.

[Insert Figure 2 about here]

Enabling new practice materialities: Transferring know-what knowledge. We find that the enablement of new materialities requires know-what knowledge (what-to-use-when) to either be developed independently by practice participants or transferred by practice champions or by other practitioners. In some cases, the change in the practice materialities is rather minor or self-explanatory, as in the case of Retailer 12’s introduction of AI-powered apps into its practices:

Every time [head office] creates new apps with the store we’ll say [to store employees]: “You’re getting a new app, try it out, if you can’t figure out an app without training them then I’ve messed that up; because you’ve got Facebook or whatever on your phone you never did a training on that, you just figure it out.” (Retailer 12, Product Owner – Retail Technology)

However, in other cases, the change in practice materialities is more pronounced or dramatically different, leading to the need for more in-depth know-what knowledge transfers, as Retailer 3 highlights:

You can’t just give someone a new [interface] and tell “Just look at the new stuff”. You want to have everyone looking at the same thing, so there’s going to be a program to follow, that one person would be at page 23 and the other at page 27, what’s the point? There’s got to be a structured approach, a training in there. It’s not like “Here’s a new [interface], have a look at some product knowledge and try to make sense”. (Retail 3, Senior National Retail Manager)

Thus, in the cases of both Retailers 12 and 3, new know-what knowledge is needed to enable the new or modified practice materialities. However, these retailers differ in how knowledge is gained either through self-development or training. From store observations of these cases and others, practice

participants who gained know-what knowledge seemed at ease using newly introduced AI tools to accomplish their daily tasks.

Enabling new practice competences: Transferring know-how knowledge. The findings highlight the need for retailers to develop know-how knowledge to enable modified practice competences. Specifically, practice champions need to understand (1) the appropriate level of formal training, (2) the needed facilitator (i.e., human versus technology) of this knowledge transfer, (3) the suitable deployment of trainers (i.e., internal versus external trainers) to successfully enable competences, and (4) the essential resources for knowledge transfer.

First, enabling practice competences requires different degrees of formalization, depending on the type of knowledge that needs to be transferred. Consider, Retailer 13:

We had so-called “change managers,” so we took some of the best store managers and gave them all the knowledge about new technologies. And then we used the train-the-trainer approach in order to be able to land the technology to 400 stores. They’re coming to all the training at headquarters, and then they’re spending the knowledge towards the store managers and their store teams in the regions. (Retailer 13, Director Business Solutions – RFID)

This director outlines the firm’s strategy of converting store managers into “change managers” (i.e., practice champions) through a formal training program designed to transfer knowledge of how to operate AI technologies effectively in the store. These managers are then able to cascade knowledge on to other employees, thus facilitating AI technology embedding into local retail practices.

Conversely, when information on competence development is not codified, practice champions or practice participants pass on their tacit knowledge to develop practice competences in more subtle, informal ways. This involves showing by doing where observation results in emulation, as explained by Retailer 5:

Without training [employees], the interactive [interfaces] have been here when the store first opened, so everyone is very familiar with it... everyone knows how to operate an interactive [interface], so for us it seems very easy.

This manager’s comments outlined that their employees are shown how to use new materialities (interactive interfaces) without formalizing knowledge transfer.

Second, when the organization has codified the required knowledge, formal training can be facilitated through self-directed learning technologies (e.g., iPads and computers showing processes, manuals, videos), as described by Retailer 2:

The team uses iPads as a learning tool so our communicative portal from corporate to stores is called “The Terminal” and that is also available on the iPad, and that has different training tools, different communications. So, 98% of my team are millennials, so this is their worlds. The training takes two minutes, they’re like “Yeah, yeah [*laughing*] we know how to navigate through all of this.” (Retailer 2, General Manager Global Flagships)

This manager explains that know-how training using technology is particularly effective due to the characteristics of their store employees. Store visits reveal that employees who are vested in the change largely support this manager’s perspective.

Third, the field interviews revealed that most participants preferred internal rather than external trainers due to the former’s first-hand knowledge of existing practices and the broader organizational context. Furthermore, retailers often gravitate to internal training to safeguard sensitive know-how and reduce outsourcing costs, especially when multiple training sessions are required over an extended period. However, the consultants argue that competences are best acquired with the support of both internal and external trainers, as expressed by Consultant 7:

Communication internally is really important. This is also where you either appoint somebody internally who really understands that, or you appoint the consultancy who understands what the project is all about and not just to set the dates. (Consultant 7, Executive Consultant and Director)

From this perspective, while internal trainers possess critical explicit and tacit organizational knowledge, they often lack the skills necessary to enable effective knowledge transfers. To this end, external trainers may be brought in to support practice participants in developing more valuable competences and to identify effective technology integration, thus minimizing practice disruption. Although our research findings highlight consultants’ strategic rationale for a balanced approach, their views might be affected by the need to justify their business case as an ‘internal only’ approach represents a threat to the value they may provide to the industry.

Fourth, enablement of AI competences requires retailers to factor in organizational resources (i.e., budget, time, trainers) for continuous training, beyond initial AI implementation stages. If

competence enablement is not sustained properly, practice change may fail. Consider, Retailer 2:

We work in... [an] old... cascading model... we always train our Heads of stores and DMs [District Managers] first, then we train the Store Managers, then the Store Managers are kind of tested to train the rest of the team... I would much prefer to also be able to provide more payroll hours, some actual local trainers, to go and answer questions... a bit more follow-up, because it usually takes a couple of weeks for somebody to realize what they can't figure out. So, it's just training them at the start, you really can't stop there...now, I know that's right. Do I always have the funds to do that? No. (Retailer 2, VP European Store and Operations)

This senior retail executive cautions against know-how training efforts that end after the initial implementation phase and highlights the importance of continuous training to ensure successful practice change. As such, enablement that is conducted continuously is more likely to result in AI embedding into existing retail practices, thus leading to practice participants' sustained usage of AI technology. However, as this senior manager points out, funds are not always available to allow continuous training, which resonated with other interviewees experiencing similar issues.

Enabling new practice meanings: Transferring know-why knowledge. Findings highlight that know-why knowledge (understandings and meanings) is required to enable practice meanings that re-frame new routines leading to practice participants' buy-in or embracement of AI tools.

Consider Retailer 11's investments in smart mirrors in their retail stores:

What are the benefits *to [the store employees]*? Yes, to their customers, but to them, at the end of the day these people have sales targets and that's what they care about. Whatever you are doing, how is it going to help them achieve their target? ... Many companies just throw something out, and the training is functional. The training doesn't have to be functional, today... It's about the *why, why* we are doing this? So, that is what is key for successful implementation. (Retailer 11, Global Director Retail Experience)

This director emphasizes that know-how training (e.g., how to use smart mirrors) is necessary but not sufficient for the successful embedding of AI in retail practices. Know-why knowledge (e.g., explicating the sales and efficiency benefits of smart mirrors) is the crucial type of knowledge to focus on in this context to gain practice participants' buy-in. This point is further stressed by

Consultant 7:

It should be about really making people understand why you are doing it. That communication is not something that is common in most retailers... Very often people are not given a

compelling rationale. They are just told to do it. Those people who are in mid-level roles, they are the ones who might hold things up. They are the ones who might not see why they have to go through all this hassle. (Consultant 7, Executive Consultant and Director)

These comments reveal the importance of meanings enablement by retailers orchestrating change. An executive at Retailer 2 further explains the importance of know-why knowledge sharing:

Once any process or new program is going to be rolled out at a corporate level, what we would begin to have is a communication to allow [store employees] to understand the why's, the when's, the how's, the benefits. So, even before we've seen any program or any process, it would be an understanding of what that is, the benefits to the business as a whole, and the benefits to the store. (Retailer 2, General Manager Global Flagships)

These quotes illustrate the crucial place of meanings and their enablement through the sharing of know-why knowledge among practice participants.

However, at the practice participant level, we uncover substantial heterogeneity as some individuals are less willing to change their routines, as indicated by a Store Manager from Retailer 1:

Some people have been working here [in this store] for 20 years; hence, they've been working in a certain way for so many years. Maybe they're even a bit skeptical towards technology. It isn't easy. I always try to apply these principles to myself. I think it's extremely important to spread to the sales staff what are the real benefits for them deriving from the technology. I believe in the technology, as I could see the benefits it could bring to my daily work. But if you can't spread this and transmit this to the sales staff, that's it, game over. (Retailer 1, Store Manager)

This manager understands the meaningful benefits that AI brings to store operations, but more importantly, they share know-why knowledge with colleagues to ensure their own buy-in. Often meanings enablement leads to more global impacts for practice participants, as evidenced by this retail supervisor:

Store [employees] are happy as they see their turnover increase, they move items and ship them. So, the first thing that online staff told me this morning was "We've been improving our online performance lately" [*smiling*]. (Retailer 1, Retail Supervisor)

This perspective is further supported by store observations where Retailer 1's employees reiterated their enthusiasm for a new AI tool for improved product visibility and inventory control, as they could personally witness their success powered by their modified routines. These quotes evidence the importance of meanings enablement to not only achieve practice participants buy-in and eagerness to use AI through know-why knowledge, but more importantly, their apparent increased job satisfaction.

Enhancing practice change via contextual knowledge transfer. Beyond the important core types of knowledge discussed above, data show that additional contextual knowledge (i.e., know-who, know-where, know-when) can enhance successful practice enablement, and, in turn, contribute to create the optimal conditions for successful practice co-evolution. Consider, Retailer 11:

With the clienteling application, you enable associates to sell inventory from anywhere. So the big unlock is to create that one pool of inventory. That has to happen in the background, so that is a lot of work that operationally a company has to do, to make stuff coming from *anywhere* available to a customer. (Retailer 11, Global Director Retail Experience)

As the quote shows, specific employees (know-who) are allocated tablets with a clienteling application that provides inventory visibility to fulfill customer orders from the shop floor (know-where). As their Store Manager explains, the application allows employees “to shop with our clients” to enhance the customer experience. As he elaborates further, “I can call [my customer] once [the product is] ready. So, our one-to-one [clienteling] app has all our customer CRM details [including] all their shopping history.” (Retailer 11, Store Manager). This AI application not only enables employees to observe important customer characteristics but also guides them towards enacting the practice at the right time (know-when) to optimize the customer experience. Strategically transferring this contextual knowledge adds to the ease of the practice enablement process by allowing practice participants to focus primarily on developing core knowledge types.

Theoretical Implications

In contrast to traditional models of adoption (e.g., Bass 1969; Moore and Benbasat 1991; Rogers 2003) that focus on the scope and cadence of an innovation’s sales and initial use or the antecedents of individual diffusion readiness (Davis 1989; Venkatesh and Davis 2000; Venkatesh et al. 2003) and organizational diffusion readiness (Tornatzky and Fleischer 1990), this article illuminates how AI is intentionally embedded within retail practices for sustained use. This shift away from the AI technology itself and toward the process of embedding AI within retail practices yields several substantive theoretical contributions. First, this article delineates the process of *practice co-evolution* as the collaborative effort, among both practice participants and practice champions, to embed AI within existing retail practices, leading to innovation and sustained practice

diffusion. Second, it identifies *practice enablement* as a critical mechanism that fosters practice co-evolution through orchestrated knowledge exchanges among practice participants.

Practice Co-evolution: The Collaborative and Recursive Strategic Emplacement of AI

While some practice theorists (e.g., Schatzki 1996) emphasize that practices have continuity and trajectories, this article's findings echo Akaka et al. (2022) who argue that when a practice spreads, there is no exact practice reproduction. In fact, we find that practice participants collaboratively activate strategies to creatively apply new dispersed practices in ways that are often different from the co-envisioned practice. These individuals adapt, rather than fully adopt, a practice to fit within their established routines. However, the findings depart from Akaka et al. (2022) as they studied organic uptake of exogenous technologies, whereas we examine how retailers strategically orchestrate practice changes to collaboratively incorporate AI.

In contrast to prior practice literature, a central finding of our research is that the successful embedding of AI requires practice co-evolution to be collaborative across all practice phases by opening up discursive channels, which are multi-lateral communication channels between practice champions and practice participants. Empirical insights reveal how retailers co-envision AI embedded practices with involved stakeholders, leading to the formation of practice competences and meanings and the dissemination of these competences and meanings through enablement.

Recognizing that practices only exist as they are performed (Nicolini 2012), our data suggest that a sustained AI adoption process is not a one-and-done phenomenon, but rather an ongoing multi-stakeholder collaborative process that allows for continuous balancing of practice elements necessary in the perpetual negotiation of overlapping, competing, and adjacent dispersed practices within an integrative retail practice. This research delineates living practices in which, after the co-realigning phase, practices are co-envisioned and co-adapted again. Further, by demonstrating that the co-realigning phase is not the end but also the beginning of a new cycle, this research highlights a critical revolving process largely ignored in previous studies. Thus, we propose a recursive phasic model of practice co-evolution, as illustrated in Figure 1 above. The model provides guidance to innovating retailers on how to carefully consider lived practice alignments to actively co-adapt and

co-(re)align practice innovations to emergent conditions facilitating their sustained use. This model underscores how knowledge occupies a central place by balancing the dynamic relationship between practice elements across phases leading to practice enablement at the individual level.

Practice Co-evolution requires Practice Enablement

Prior research acknowledges that practices within formal organizations, such as retailers, spread through orchestrated knowledge transfers between employees and managers, and among employees (e.g., Nicolini 2012), yet the practice literature has taken these knowledge transfers for granted. For example, although he first proposes three forms of knowledge (know-how, knowing that, and knowledge of) that are important in practice spread, Schatzki (2017) admits that the distinction between them “boils down to know-how” (pg. 39). While acknowledging the importance of know-how, we investigate other knowledge types (i.e., know-what, know-why) to better understand how knowledge transfers are essential to practice spread and the successful implementation of AI. Furthermore, we outline that practice change depends on, and can be enhanced by, contextual knowledge transfers (i.e., know-who, know-where, know-when knowledge) that practice research has left, for the most part, unexplored (Schatzki 2019; Shove et al 2012).

By integrating practice theories (e.g., Feldman and Orlikowski 2011), knowledge transfer (e.g., Garud 1997), and strategic enablement literatures (e.g., Peterson et al. 2021), this article deconstructs the fundamental dimensions and contexts for enabling practice materialities, competencies, and meanings. Through the integration of these theoretical lenses, we illustrate how practice co-evolution coupled with enablement strategies scaffold the competences required for AI implementation that leads to successful integration within existing retail practices.

Managerial Implications

While the marketing and business literatures provide much managerial direction on the embedding of AI (e.g., Kinkel et al. 2021; Venkatesh 2022), extant research offers little insight into how managers can successfully embed AI investments into employee practices for sustained use. By examining how AI disrupts and evolves existing practices, this article offers two actionable sets of implications for retail leadership teams. First, senior managers should consider ways of increasing

meaningful collaboration between themselves, store management, and retail employees to ensure successful embedding and, more importantly, usage of their investments in AI. Whether investing in AI to improve customer experience or to generate operational efficiency to respond to competitive pressures (e.g., Grewal et al., 2020), our findings demonstrate that successful embedding requires practice co-evolution with affected employees for AI to become embedded within modified practices. While the need for collaboration with employees in any implementation may seem intuitive, many retailers in our study had neither planned for nor actioned meaningful collaborative efforts that impact actual implementation plans. Managers can create implementation environments that facilitate collaboration by openly providing transparent and easily understandable (i.e., avoiding technical language) information about the AI investment. Doing so provides retail employees with the contextual information they need to express meaningful views and concerns about the impact of AI on their routines, thus motivating closer involvement and personal investment in the innovation.

Second, as part of their AI investments, senior managers need to strategically plan and actively manage the required knowledge transfers to enable employees to embed AI within their workplace routines. Our findings evidence the importance of practice enablement as an employee state where the modified practice materialities, competences, and meanings have been enabled through the transfers of know-what, know-how, and know-why knowledge, and enhanced by contextual knowledge. With these concepts in mind, managers can design tailored training programs targeted to specific types of knowledge, leading to the enablement of the modified practice elements. On the one hand, for more complex implementations, these training programs likely require interactions between managers and employees, and among employees to facilitate the transfer of missing tacit knowledge. On the other hand, for more simple implementations, training programs could be more straightforward, either through explicit instructions or self-directed online education. However, as our findings indicate, senior management must commit significant resources to continuous training programs that support employees' practice enablement and address any issues arising from AI technologies.

Armed with these two important managerial implications, senior retail leadership teams can approach their investments in AI with greater confidence and the expectation of competitive success. While AI investments are currently being actively considered by many retailers, the managerial guidance in this section may also be useful for other types of organizational investments that impact employee routines.

Developing Future Research on Practice Co-evolution

While this article has uncovered many aspects of practice co-evolution, including the three distinct phases in which it occurs and its underlying mechanism of practice enablement, many important future research avenues could extend the concept's coverage. The following paragraphs identify potential research directions and related questions are listed in Table 5.

[Insert Table 5 about here]

The study findings demonstrate that successful retail practice co-evolution using AI requires early collaboration with impacted employees. While this article focuses only on one group of practice participants (i.e., retail employees) future research could investigate whether other retail practitioners (e.g., consumers) prefer different modes of communication and collaboration leading to differences in how practice co-evolution is realized. Furthermore, retailers deal with a multiplicity of stakeholders with disparate motivations and goals (Neville and Menguc 2006) leading to potentially fruitful avenues where future practice co-evolution research could examine the impact of other stakeholders (e.g., customers, suppliers, policymakers) relationships both with the organization and with other stakeholders' groups. This research could proactively identify potential hazards or unintended benefits of AI investments in retail contexts.

Through practice co-evolution, the findings uncover how modified practices spread from one practice participant to another by enabling the new practice materialities, competences, and meanings chiefly through the transfer of different types of knowledge. However, this substantive finding spawns new avenues of inquiry into practice enablement's contextual factors and boundary conditions. For example, future research into frontline retail contexts could unpack contextual factors—such as employees' characteristics, retail positioning, and timing—that impact the

effectiveness of different approaches or methods of enabling modified practices. Furthermore, as repetitive tasks are increasingly replaced by automatized or self-service processes (Moorman and Day, 2016; Quinn et al. 2016), further research on the challenges, incentives, and opportunities for employees and other stakeholders might reveal new sources of innovation and value. Such research might also investigate how best to utilize the new competences, data, and metrics generated by adapted practices.

The findings suggest that employees working in organizational cultures where change is embraced are more able to pivot their practices and communicate with senior managers during practice co-evolution. This highlights another untapped area for research exploring corporate governance strategies for creating and promoting agile organizational cultures that actively seek to innovate practices to optimize retail performance.

This research examines practice co-evolution emanating from AI innovations embedded in specific dispersed practices (e.g., product or service curation, inventory management, customer relationship management) iteratively (e.g., one at a time) within the integrative practice of retailing. The data show that practice enablement is accomplished through knowledge transfer at two distinct levels: core knowledge related to embedding the AI innovation into a specific dispersed practice and contextual knowledge transfer that enables the embedded AI to be consistently implemented. Future research might examine occasions when AI is embedded in multiple dispersed practices simultaneously; for instance, when two new AI technologies are introduced at the same time and used in the same retail exchange. Our data suggest that core knowledge transfer will still be required in simultaneously co-evolving multiple dispersed practices, but we expect contextual knowledge transfer to become more critical in such cases. Furthermore, we posit that when the AI is embedded into the integrative practice itself, as when a metaverse is used to promote, trial, and sell products, the contextual knowledge transfer may again rival the core knowledge transfer because the AI is not discretely embedded but rather permeates the entire retail experience.

Finally, our research study is set in the empirical context of embedding AI in fashion retail contexts to facilitate a deep understanding of how practice co-evolution and practice enablement

occur. Future research might consider how practice co-evolution would be different or similar in other contexts, such as regulations that impact operations, mergers with other organizations, or industrial organization (i.e., unions). Such inquiries might uncover the conditions where practice co-evolution results in new not modified practices.

Conclusions

This article combines practice theoretics, knowledge transfer, and strategic enablement literatures to examine AI implementation in retail contexts. It empirically derives a recursive phasic model of practice co-evolution. The findings identify that practice co-evolution occurs in three collaborative phases of co-envisioning, co-adapting, and co-(re)aligning, also revealing the mechanism of practice enablement that facilitates sustained usage of AI investments among retail employees. This process can be complex, messy, and changeable, where the phases interact and interconnect. The model provides actionable implications for implementing innovations to ensure that lived practices are aligned and contentiously adjust to achieve organizational goals.

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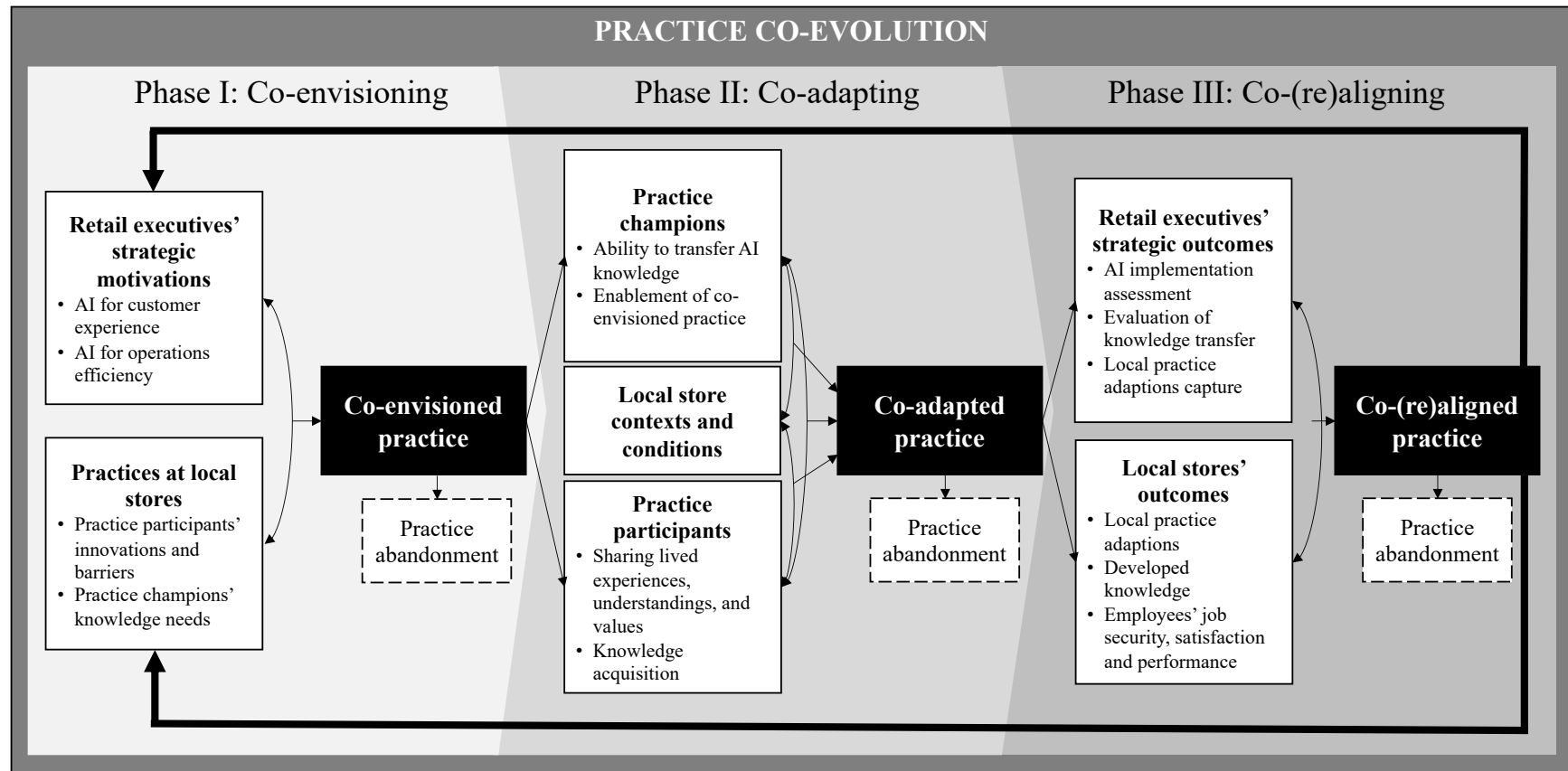
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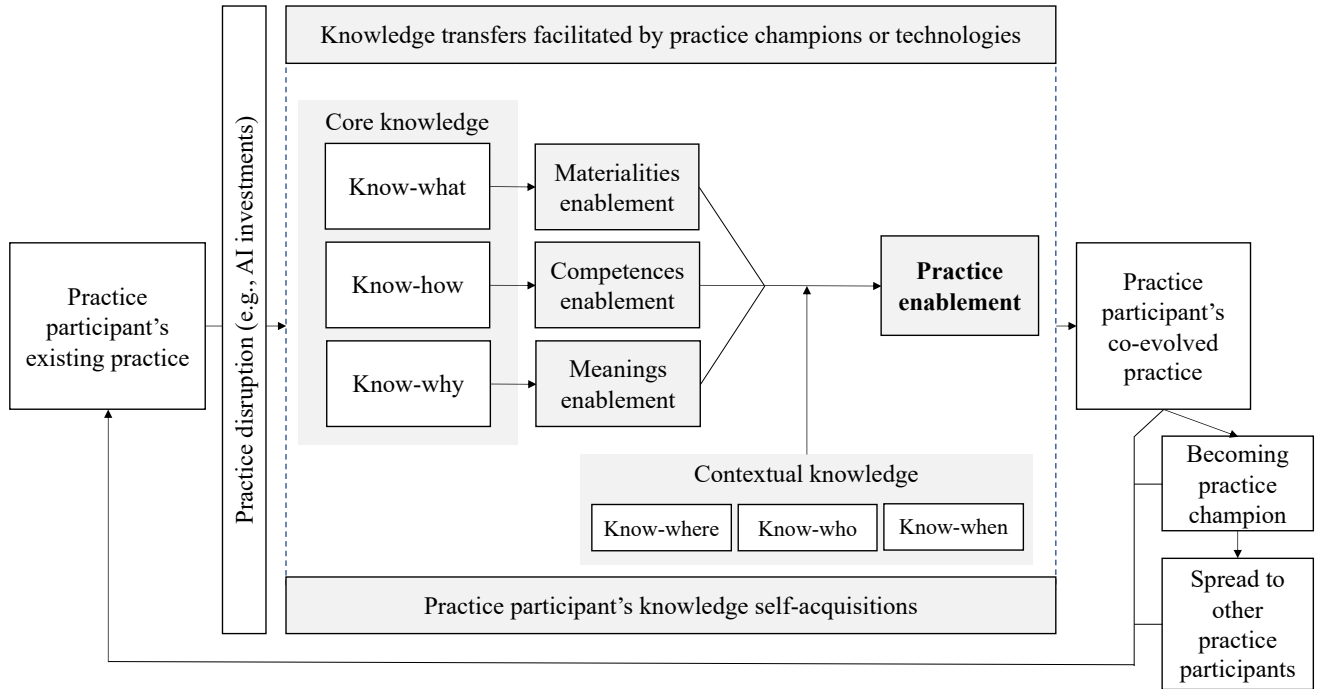
Figures

Figure 1
A model of practice co-evolution



Note: Practice participants are those who perform a practice (e.g., store employees), whereas practice champions are those who intentionally disseminate a practice (e.g., senior executives, local retail managers, and trainers) (Dilling et al. 2013). Discursive channels are indicated by the double-headed arrows and observed causal paths are indicated by single-headed arrows.

Figure 2
The practice enablement process



Tables

Table 1: Overview of AI technologies in the present ethnographic study

AI technology	Characteristics	Examples from industry reports
<i>Digital signage</i>	<ul style="list-style-type: none"> • Customer-oriented non-interactive screens powered by AI located in store or in store windows • Show advertising, sales reductions, product information, videos of new collections, product location • Content can change dynamically to match customer information through personal devices, or to match product characteristics through integrated RFID technology 	<ul style="list-style-type: none"> • Burberry displays in changing rooms dynamically matching customer information (e.g., sizes, previous purchases) • North Face displays instore and in changing rooms adapting content to match items placed in front of them (e.g., mountain scene for climbing equipment)
<i>Interactive screens</i>	<ul style="list-style-type: none"> • Tablets: display/search product information, product customization, inventory check and order placement • i-Kiosks: provide real-time informational, promotional and transactional benefits for customers • Interactive shopping windows: extensive product information, try-on and interaction for customers • Connected to inventory system through AI 	<ul style="list-style-type: none"> • Employee tablets at Emilio Pucci, Burberry, Topshop to retrieve customer information and deliver a personalized experience • M&S, Tesco's F&F, Nike – i-Kiosks for product information and location • Ralph Lauren, Ted Baker – interactive store window to access content and place orders
<i>Employee operational apps and devices</i>	<ul style="list-style-type: none"> • AI computer programs designed to run on mobile devices • Smart inventory systems providing inventory overview, customer data overview • Gather customer personal data • Allow product customization, order placement 	<ul style="list-style-type: none"> • Adidas, Zara app on hand-held device for inventory overview • Burberry app on tablet to gather and retrieve customer data, provide recommendations, customize products, place orders
<i>Self-service checkouts</i>	<ul style="list-style-type: none"> • Consumer self-service AI technology operated by scanning barcode or reading RFID tag on items • Real-time improvement of order accuracy • Allows employees to offer other services 	<ul style="list-style-type: none"> • Uniqlo, Decathlon, Zara automated identification tag reading to speed up and automate service, allowing social distancing
<i>Radio frequency Identification (RFID)</i>	<ul style="list-style-type: none"> • Wireless communication technology integrated to changing rooms, smart mirrors and products, to show customers how products look and fit and provide recommendations (also about product manufacturing and shipping journey) • Integrated to employees' operational devices for inventory overview, customer data gathering 	<ul style="list-style-type: none"> • Rebecca Minkoff, Tommy Hilfiger RFID tags recognize items and provide information and recommendations via AI algorithms through smart mirrors • Zara employee app for inventory check, data gathering
<i>Beacons</i>	<ul style="list-style-type: none"> • Location-based marketing technology powered by AI • Used to attract customers into retail stores • Allows retailers to send timely messages (recommendations, promotions) and to collect data about consumers' preferences and behaviors 	<ul style="list-style-type: none"> • Macy's, Zara, H&M, Walmart and Waitrose use beacons for communication purposes • Rebecca Minkoff, to identify frequent shoppers to get an instant history upon store entrance
<i>Smart mirrors</i>	<ul style="list-style-type: none"> • Located in store or dressing room, identify the item brought close to them through integration of RFID tags • Customer virtual product try on through AR technology • Provide product information, availability, recommendations, personalized offers • Social aspect of retail experience by sharing on social media 	<ul style="list-style-type: none"> • Burberry smart mirrors in store show product manufacturing and catwalk show features • Rebecca Minkoff smart mirrors in changing rooms for virtual product try on, style advice via AI algorithms, allow retailers to keep track of consumer behavior
<i>Augmented reality (AR) apps</i>	<ul style="list-style-type: none"> • Customer-oriented technology powered by AI, dynamically combining real world and digital information • Digital representation of products and environment for virtual try on, extra information, connecting touchpoints retailer-consumer, augmentation of store environment 	<ul style="list-style-type: none"> • Sephora use AR mirrors for simulation of make-up try on online and in store • Michael Kors AR smart mirrors for product try on and recreation of product environment, e.g. evening context for occasion purse
<i>Virtual reality (VR)</i>	<ul style="list-style-type: none"> • Customer-oriented technology powered by AI, using wearable devices (e.g., headset) which block out the real world and immerses shoppers in virtual 3-D environment • Immersive virtual effects to dynamically transport customer in another environment related to the retail brand 	<ul style="list-style-type: none"> • Tommy Hilfiger, Dior, Gucci use VR headsets in-store to transport customer in catwalk show of the brand • Rapha's VR experience transports customers in simulated bike circuits and communities
<i>Metaverse</i>	<ul style="list-style-type: none"> • A virtual-reality space that uses AR, VR, blockchain and concepts of social media to simulate real world or other possible worlds for the customer • Customers can interact with a computer-generated environment and other customers (users) 	<ul style="list-style-type: none"> • Balenciaga use of metaverse via Fortnite video games, showcasing in-game outfits allowing users to play with characters • Nike metaverse allows users to virtually try on products and play games
<i>Body scanners</i>	<ul style="list-style-type: none"> • Build the user's 3D human model (avatar) • Provide garment sizes and brand fit recommendations • Available in store, allow online and in-store shopping 	<ul style="list-style-type: none"> • Body scanners in New Look and Selfridges, London, provide products and brands recommendations to customers

Table 2: Alternative theoretical perspectives and empirical studies examining employee technology adoption

Theoretical perspectives	Core conceptual factors influencing adoption	Selected examples of empirical applications					
		Empirical studies [†]	Technology examined	Research context	Adoption stages		
					Decisions	Executions	Outcomes
Diffusion of innovation (Moore and Benbasat 1991; Rogers 1983)	<ul style="list-style-type: none"> • Voluntariness • Image and visibility • Relative advantage • Compatibility • Ease of use • Trialability 	Lesar and Weaver (2022)	Quality control tools	Travel and tourism organizations		X	
		Baird et al. (2012)	Web-based patient portals	Ambulatory-care clinics	X		
		Wei (2006)	WI-FI powered WLAN	Higher education	X		
Technology acceptance models (TAM: Davis 1989; TAM2; Venkatesh and Davis 2000)	<ul style="list-style-type: none"> • Perceived usefulness • Perceived ease of use • Social influence processes (TAM2) • Cognitive influence processes (TAM2) 	Brandon-Jones and Kauppi (2018)	Electronic procurement systems	University procurement	X		
		El-Gohary (2012)	Electronic marketing systems	Small tourism firms	X	X	
		Kim et al. (2008)	Hotel front office systems	Luxury hotels	X		
Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003)	<ul style="list-style-type: none"> • Performance and effort expectancies • Attitude towards using technology • Social influence • Facilitating conditions 	Liang et al. (2021)	Blockchain	Healthcare and financial firms	X		
		Bill et al. (2020)	Social media	B2B sales functions	X		X
		Yueh et al. (2016)	Mobile technology	Multiple roles and industries	X		X
		Gupta et al. (2008)	e-government ICTs	Government organizations	X		
Technology-organization - environment framework (Tornatzky and Fleischer 1990)	<ul style="list-style-type: none"> • Technological context • Organizational context • Environmental context 	Wang et al. (2016)	Mobile reservation systems	Accommodation providers	X		
		Chen et al. (2015)	Big data analytics	Supply chain function in multiple firms	X		X
		Picoto et al. (2014)	Mobile commerce	Firms in different industries	X		X

[†] Some studies adopt multiple theoretical perspectives.

Table 3: Selected recent empirical research on practices and technologies

Citation	Empirical contexts			Adoption stages examined			Practice elements discussed		
	Topic	Agent	Technology	Decisions	Executions	Outcomes	Materialities	Competences	Meanings
Alford and Jones (2020)	Business models	Entrepreneurs	Digital media	X	X			X	
Ancillai et al. (2019)	B2B sales	Sellers and buyers	Digital media	X	X				
Avgar et al. (2018)	Nursing homes	Nurses	Healthcare systems		X			X	
Bagot et al. (2020)	Distance care	Physicians, nurses	Telehealth systems		X	X			X
Bergey et al. (2019)	Hospital care	Nurses	Healthcare systems		X	X	X		X
Bulmer et al. (2018)	Retailing	Consumers	Self-checkouts		X				
Gram-Hanssen (2010)	Energy usage	Consumers	Household electronics		X				
Harries et al. (2019)	Chronic illness	Patients	Mobile devices		X				
Jalas et al. (2017)	Energy usage	Consumers	Heating systems		X		X		X
Lee (2018)	Food waste	Consumers	RFID		X				
Philip et al. (2019)	C2C sales	Consumers	Digital platforms		X				X
Rai and Selnes (2019)	Education	Students	Digital textbooks		X		X		
Sahakian and Wilhite (2014)	Weight loss	Consumers	Digital platforms	X		X			X
Skálén and Gummerus (2022)	Digital music	Consumers	Digital platforms		X		X	X	X
Tan and Chan (2018)	Seniors' usage	Consumers	ICT		X				
Xu et al. (2021)	Tourist scams	Consumers	Digital media	X	X				
This article	Retailing	Employees & others	AI	X	X	X	X	X	X

Table 4: Summary of data sources across stakeholders' groups

Description	Purpose	Sampling details	Dataset
Retailers			
<i>Head office level:</i>	Understanding the strategic rationale and the specific organizational complexities of AI implementations in retail	Purposeful sampling, followed by snowball sampling, of retailers operating in the fashion industry that had undergone a recent AI implementation	23 interviews (individual and group) with 29 executives across 14 global fashion retailers resulting in 416 pages of transcripts
<i>Store level:</i>	Understanding the store level's perspective on processes involved in AI adoption and implementation, including causes and effects of problems with AI, from people that have lived the practice change in their daily tasks	Purposeful sample, following contact and interviews with Head Office level participants, of store level informants of the respective retailer	16 interviews (individual and group) with 17 senior managers across 14 global fashion retailers resulting in 261 pages of transcripts
Technology providers	Understanding retail-sector level options for optimizing AI technology to enhance retail operations and customer experience	Purposeful and snowball sampling of technology providers that had outsourced AI technology	Interviews with 13 executives and senior managers resulting in 234 pages of transcripts
Business consultants	Understanding retail sector-level complexities and potential bottlenecks of AI implementations	Purposeful and snowball sampling of business consultants that had provided strategic advice on AI implementations	Interviews with 15 executives and senior managers resulting in 221 pages of transcripts

Table 5: Suggested questions for future research

Topic	Suggested questions for future research
Practice co-evolution	<ul style="list-style-type: none">• How can external stakeholders enhance practice co-evolution? To what extent does this vary across the phases of practice co-evolution?• How does the individual or group driving practice co-evolution contribute to overall success of the practice change? What may be the advantages or disadvantages (e.g., less investment, more up-to-date overview of market trends, not exclusive)?• How can discursive channels between executives, practice champions and practice participants be created or nurtured?• How does the velocity of practice co-evolution impact practice outcomes? How does the timing alter the practice co-evolution process or its success?• How do customers react to employee-induced practice co-evolution that changes customer routines? What measures could encourage a smooth transition?• How can retailers maintain successful practice (re)alignment in a rapidly changing environment?• How much deviation from the ideal co-envisioned practice is considered acceptable to achieve successful technology implementation?• How would serendipitous practice co-evolution result in different processes or outcomes compared to orchestrated practice co-evolution?• To what extent would practice co-evolution differ in other change contexts (e.g., non-AI technologies, new regulations impacting operations, B2B organizations)?• To what extent would practice co-evolution differ when AI is embedded in multiple dispersed practices simultaneously?• To what extent does the magnitude of practice disruption impact practice participants' abilities to adapt their current retail practices?• What are suitable metrics to establish whether the co-(re)aligned practice is in line with the co-envisioned practice?• How can retailers maintain employee involvement in the long run across recursive practice co-evolution to deal with repeated technology disruption while averting employee fatigue and other negative outcomes?• How can retailers nurture a culture of innovation within the organizations that actively seek practice innovation that creates new co-evolutions of retail practices?
Practice enablement	<ul style="list-style-type: none">• To what extent are external stakeholders enhancing practice enablement of retail employees compared to internal stakeholders? How do these external stakeholders impact the practice enablement process (e.g., conferring training, internal communication, workshops)?• What are the most suitable methods and channels to enable practice competences (e.g., in person, via technology) depending on contextual factors (e.g., technology type, practice participants' characteristics and values, retail positioning)?• In what circumstances does know-why knowledge dominate other core-knowledges? What are the most appropriate ways to transfer this knowledge?• What contextual factors are the most important to enhance the practice enablement process? When can those contextual factors be barriers?• How does employees' perceived meaning impact on their acceptance and adoption of practice change?• What is the influence of practice participants' trust in, or commitment to, the retail organization in sharing core knowledge that enables colleagues?• What practice participants' characteristics predict their potential transition to practice champions? What practice enablement strategies can be implemented to ensure this transition?• How should managers evaluate the efficacy of new technologies' implementations over time across different stakeholders? What are the important KPIs for practice enablement?