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Practitioner Experiences With Digitalization in Human Resource Management

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ABSTRACT

This paper examines a knowledge gap regarding how HR practitioners experience the implementation of significant changes to policies and practices within their own function. It focuses on the challenges created by attempts to apply digital technologies to within-HR activities. Coding transcripts from semi-structured interviews with practitioners, we found support for a model of HR digitalization that relates the components of technology implementation, that is, technology, organization, and people (TOP), to its operational, strategic alignment, and strategic integration consequences. We also found that each of seven HR subfunctions uses different technologies to digitalize and at different paces of implementation, that we can array HR subfunctions along a continuum of consequences as they digitalize, and that technology implementation advances dynamically as it iterates over time through cycles of development and adjustment.

1 | Introduction

> Four things a strategic HR business partner now needs to do extremely well. First, be a facilitator, an influencer, very well networked and able to influence across the business. Second, deriving insights from the data. Next, anticipate, take a holistic view, take a step back, and then look at the implications in the near future. Last, be a leader involved in change and transformation. So that's a different HR professional that I'm looking for, and there aren't many of them.
>
> (Interviewee, VP of HR)

In today's business environment, the ability of executives to respond rapidly to changing conditions is often a prerequisite to success (Caligiuri et al. 2020; Hillebrand et al. 2025). In recent years, digitalization has received much senior management attention (Fernandez-Vidal et al. 2022; Gartner 2024) as technologies such as remote communication, analytics, social media, and AI have emerged as means to goal attainment. As HR managers continue to seek top management inclusion (e.g., Diefenhardt et al. 2024; Cayrat and Boxall 2023), they must ensure that employees are equipped to address the challenges presented by digitalization (Vargas et al. 2018). For HR practitioners, digital solutions create opportunities to add value by managing the complexities of HR-related implementation (Ruta 2009; Trullen et al. 2020). Implementation involves, "The

Summary

- What is currently known?
  - Academics and practitioners have both paid much attention to digital implementation.
  - Recent academic literature on implementing HR initiatives has emphasized the importance of line managers, employees, and top management. Less is known about how HR managers introduce digital technologies into their own function.
  - Addressing an area short on theory, recent investigations have identified components and consequences of HR digital implementation.
    - Scholars have proposed that three key components —technology, organization, and people (the TOP framework)—affect the adoption of digital HR.
    - Additionally, they have portrayed implementation of such initiatives as occurring in three stages—operational, strategic alignment, and strategic integration.
- What this paper adds?
  - It provides empirical evidence to support a model of HR digitalization that relates TOP component interactions to their operational, strategic alignment, and strategic integration consequences.
  - It finds that each of seven HR subfunctions uses different technologies to digitalize and at different paces of implementation.
  - It delineates stages of digital implementation and activities characterizing each stage for each HR subfunction.
  - It presents technology implementation as a dynamic process that iterates over time as TOP configurations adapt to changing conditions.
- Implications for practitioners
  - Our study offers HR practitioners a deeper understanding of how to effectively implement digital technologies. They can use Table 2 to learn which stages of consequences their subfunctions occupy and the types of technologies needed to reach the next stage.
  - To successfully implement digital technologies, they will need to adjust the technology, organization, and people elements of HR subfunctions and the function itself.
  - To achieve advanced-stage digitalization, they will need to digitalize each HR subfunction, collaborate across subfunctions, develop a comprehensively integrated digital HR function, and facilitate digital ties with other company functions.

translation process by which HR practices are incorporated into daily organizational life by HR professionals, targeted managers and employees, through the design, introduction, application, experience and perception, but also subsequent evaluation, redesign and reintroduction of the HR practices" (Bondarouk et al. 2018).

Academics and practitioners have both paid much attention to digital implementation. Recent academic literature has emphasized the importance of line managers (e.g., Gilbert et al. 2015; Katou et al. 2021), employees (Mirfakhar et al. 2018; van Mierlo et al. 2018) and top management (Mirfakhar et al. 2018; Wang et al. 2024). By contrast, HR managers' own experiences implementing digital initiatives within HR have received less attention (Trullen et al. 2020). HR practitioners, including those we interviewed for this paper, have sought to substitute digital for analog technologies for within-department activities like recruiting, upskilling, and coordinating projects within and across offices and countries. To implement a digital technology, HR managers must learn how it works, how it might help their units, and whether to adopt it, a process that conforms with early-stage diffusion of any innovation (Kohli and Melville 2019). However, they often lack the necessary digital skills (Shet and Pereira 2021). In Guest and Bos-Nehles (2013) stage model, starting with the decision to adopt, implementation proceeds through designing high quality into it, gaining cooperation from parties necessary to implement it, then ensuring follow through on high-quality implementation. Although internal actions within HR are a vital first step, they have received little research attention. As a result, Guest and Bos-Nehles (2013, 93) observed, "Most research on HRM and performance has ignored the role of the HR function. Yet we have argued that it has—or should have —a central role in the introduction and quality assurance of HR practices."

We seek to address this gap by investigating HR practitioners' experiences with implementing digital technologies within HR. We argue that insufficient knowledge of how such technologies operate hampers HR's ability to digitalize itself as well as offer effective digital workforce management solutions elsewhere in the organization. In assessing the diverse levels of digitalization reported by our interviewees, we have sought to explain the gaps, testing the technology-organization-people (TOP) model of technology adoption presented by Bondarouk et al. (2017), Prikshat et al. (2023), and Zhou et al. (2022), which also includes their operational, strategic alignment, and strategic integration consequences as articulated by Strohmeier (e.g., 2020) and Lepak and Snell (1998). We expected the TOP components, as "Three closely interconnected subsystems" (Prikshat et al. 2023), to contribute interactively to these consequent stages and different HR subfunctions to each show their own pattern of digitalization. Positing that these consequences arise in stages (Guest and Bos-Nehles 2013), we explore what they are and how they develop over time, borrowing from structuration theory (van Mierlo et al. 2018; Wang et al. 2024), which views practitioner implementation as a dynamic, iterative process. Starting with operational consequences, HR executives adopt, subfunction managers implement, and professionals apply additional technologies that cumulatively move them into the strategic alignment stage. As they continue to digitalize, increasing technological development leads them to pursue strategic integration, which commits them to full digital transformation.

If most HR functions are nearly fully digital, this study may have limited value. However, the few reports that exist indicate that in practice digital HR is far from pervasive. For example,

Mugge et al. (2020) reported that executives in 145 companies (29%) ranked their stage as digitally mature or maturing while executives in 352 companies (71%) ranked it as immature. In its survey of 570 CHROs, Accenture reported (2023) that only 29% claimed to have the necessary capabilities.

Our paper contributes in four ways to knowledge on how HR practitioners experience digital implementation. First, it further advances the TOP model's dimensions as essential to how they digitalize, offering one of its first empirical applications. In addition, it emphasizes their interactive rather than independent effects on implementation. Second, it treats seven distinct HR subfunctions as entities that digitalize using different technologies and at different rates of development. Each shows its own trajectory, using technologies it views as most helpful, and proceeds at its own pace. Third, it links stages of digitalization to consequences of adoption, using the early stage to represent operational consequences, the middle stage to represent strategic alignment, and the advanced stage to represent strategic integration. Employing this stage model, it identifies the types of technologies each subfunction adopts as it moves from operational to strategic alignment to strategic integration consequences, using quotes from our interviewees to illustrate each stage. Although these stages follow an ordered progression, their development is not orderly. Finally, rather than a static, one-time effect of these interacting TOP dimensions on consequences of technology implementation, it presents HR practitioner experience of these changes as iterative, dynamic, recursive, and temporal. They respond to misalignments that arise during a technology's introduction by altering the organizational structure, people, and use of the technology itself to better fit emerging dynamics over time. Ultimately, we seek to contribute to the academic literature on HR digital implementation and advance HR practitioners' understanding of how to implement digital technologies.

2 | Theoretical Background

Theoretical work to understand how practitioners digitalize HR can benefit from further development (Pan and Froese 2023; Prikshat et al. 2023; Wang et al. 2024). For example, Garcia-Arroyo and Osca (2021) observed that theories related to big data in HR were in their infancy and implementation created difficulties, partly because HR data sets often lacked the necessary size. Wang et al. (2024) claimed that similar challenges affected studies of HR analytics.

In a promising line of investigation, literature reviews by Bondarouk et al. (2017) and Prikshat et al. (2023) and a meta-analysis by Zhou et al. (2022) have coalesced around a theoretical framework that connects the two drivers of HR digital implementation that emerged from Bondarouk et al.'s (2017) review of 40 years of literature on electronic HR, (1) components that enable adoption and (2) expected or anticipated consequences of adoption. Figure 1 presents these drivers as technology, organization, and people (TOP) components of adoption that affect their operational, strategic alignment, and strategic integration consequences, using Strohmeier's (2020) terms for consequences, with Lepak and Snell's (1998) often-used terminology in parentheses. We treat the term "adoption" as the first stage in Guest and Bos-Nehles (2013) model of implementation. We also interpret "digitalization" as shorthand to encapsulate the entire implementation process for digital technologies.

After Bondarouk et al. (2017) first presented the TOP components and consequences, Zhou et al. (2022) found that use of digital technologies in HR (labeled "e-HR") mediated components-consequences relationships, related positively to overall performance, more strongly to operational than strategic alignment or strategic integration, and found support for social influence as a fourth TOP element. In Prikshat et al.'s (2023) AI-augmented HR assimilation framework, diffusion of innovation stages of initiation, adoption, routinization, and extension mediated relationships between nine TOP components and nine consequences. Expanding their fourth stage, extension, they argued that "technological innovation adoption should not be a single decision in a one-stop adoption step; instead, it is a continuous and iterative process comprising different stages" (p. 13). Although they call attention to implementation as occurring in stages, there is a need for more empirical evidence, particularly from the perspective of HR practitioners.

Below we consider TOP components and consequences then explore the stages HR practitioners encounter as they seek to implement digital technologies within their function.

2.1 | Technology

The implementation of digital technologies in HR has become a central challenge for HR practitioners. To reduce the complications of attempting to include many technologies, we identified two technology packages that have received the most

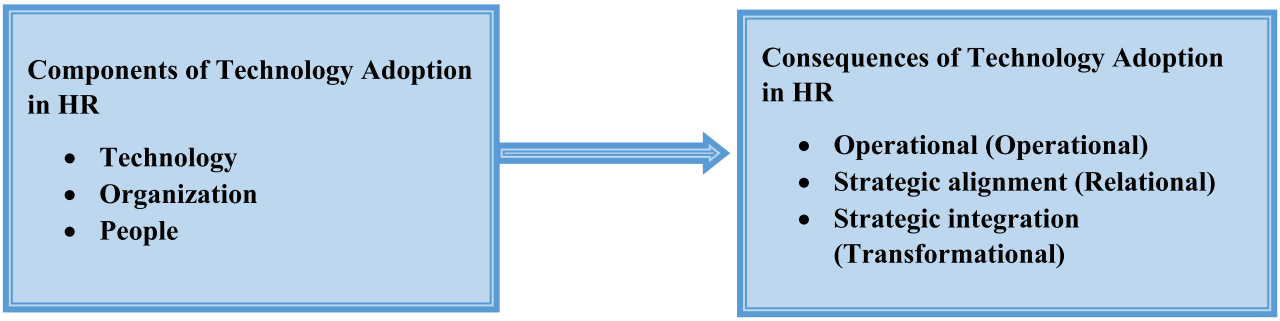

FIGURE 1 | Components and consequences of implementing digital technologies. [Colour figure can be viewed at wileyonlinelibrary.com]

attention, with some overlap between them, AI/algorithms/automation and HR analytics/big data. In the AI/algorithms/automation package, HR practitioners have shifted their attention to generative AI (Budhwar et al. 2023). A host of reviews have treated AI as an emerging technology with wide-ranging applications (e.g., Prikshat et al. 2023; Malik et al. 2023; Hillebrand et al. 2025).

Practitioners have shown more interest in the HR analytics/big data package than academics (Edwards et al. 2024), applying analytics to previously untapped employee information to aid their own and senior management decision making (Garcia-Arroyo and Osca 2021). Scholars argue that use of big data advances HR's role as a business partner by facilitating strategic decision making (Margherita 2022; Diefenhardt et al. 2024). Academic literature shows several reviews (e.g., Margherita 2022; Vargas et al. 2018; Garcia-Arroyo and Osca 2021) but fewer empirical studies (Edwards et al. 2024). TOP's technology dimension interacts with its organization and people dimensions to shape consequences for HR professionals.

2.2 | Organization

In today's turbulent environment, the accelerated pace of digital-induced change has made traditional hierarchies outmoded, pushing HR professionals to implement structures that exercise agility, flexibility, and rapid response (Harsch and Festing 2020; McMackin and Heffernan 2021). Remote technologies have provided HR project managers increased traction, using virtual teams to manage interdependencies across subfunctions, offices, and countries (Caligiuri et al. 2020; Collings et al. 2021). To implement AI effectively, HR managers are impelled to replace organizational hierarchies with autonomous units, using algorithmic coordination and behavioral monitoring to replace managerial authority (Lee and Edmondson 2017). A key issue for organizations and employees is the relationship between automation and job loss, with widely differing views expressed (e.g., Rampersad 2020; Wilson et al. 2017). HR departments have trailed other functions in creating analytics positions (Belizón and Kieran 2022; Y. Zhang et al. 2021).

2.3 | People

Bondarouk et al. (2017) reported the people factor as the most important of the three in affecting successful e-HRM adoption. Technological change happens when HR executives invest in, HR managers implement, and HR professionals install and apply digital technologies. These professionals are active agents who drive HR digitalization and strongly influence the successful utilization of technology. Strohmeier (2020) may have meant his observation solely for operational changes, but his statement has broader application, "not digital technologies but humans bring about the transformation" (356).

Even if only seeking operational improvements, new technologies require new skills to be implemented effectively (e.g., Ciarli et al. 2021; Kim et al. 2021). For example, virtual teams require skills in managing intensive teamwork remotely and across disciplines (McMackin and Heffernan 2021; Inacio et al. 2021). Technological tools require quantitative skills, which most HR professionals lack (e.g., Belizón and Kieran 2022; Y. Zhang et al. 2021). In facing employee resistance (for a comprehensive review, see Cieslak and Valor 2025), managers who use training for upskilling gain greater workforce acceptance (Ciarli et al. 2021; Vargas et al. 2018; Kim et al. 2021) by engendering technological self-efficacy and helping them manage changing social relationships (Bondarouk et al. 2017; Vargas et al. 2018). However, most companies provide insufficient resources for upskilling (Decker et al. 2023).

2.4 | T-O-P Interactions

TOP relationships are multi-directional and interactive. As their technological remit expands, HR practitioners experience uncertainties in predicting the effects of multiple emerging technologies (Ciarli et al. 2021). Structural agility and upskilling enable them to build on technologies already in use. Ciarli et al. (2021) theorized that technology-innovation-skills relationships are interactive but did not test them empirically. Interactive indicates that the effectiveness of any TOP dimension will be substantially reduced if development of one falls behind the other two. If a technology application has the right structure in place but employee skills are lacking, or employees have the skills but the structure is still in bureaucratic silos, or the structure and skills are ready but the technology does not suit the task, project implementation will be hindered.

2.5 | Consequences

In Strohmeier's (2020) four-category typology of consequences, the first ideal-type is fully analog. In the second, HR managers use digital technologies to automate operations to increase speed, decrease costs, and improve quality. In the third, they expand digital applications to multiple operational practices, generating efforts to strategically align HR subfunctions. In the fourth, they seek to integrate technologies across subfunctions to enact a comprehensive digital HR strategy.

Two meta-analyses found that digital HR is associated most strongly with operational efficiency (Theres and Strohmeier 2023; Zhou et al. 2022), reinforced by reports that most HR practitioners use technologies to automate existing tasks rather than pursue higher value-added activities (Gartner 2024). Operational uses require minor to substantial adjustments to existing organizational structures and significant workforce upskilling. Bondarouk et al. (2017) posited that the literature's focus was evolving from operations through strategic alignment to strategic integration as e-HRM professionals advanced from administrator toward strategic partner (e.g., Diefenhardt et al. 2024; Kim et al. 2021). Cayrat and Boxall (2023, 16) observe that "we need better evidence about transitional paths from operational to more strategic roles, (and) the ways in which HR professionals interpret and enact them." Pressures for agility and rapid adaptation to technological interdependencies when

pursuing strategic alignment become even more acute when HR managers seek strategic integration across subfunctions.

2.6 | Stages of HR Implementation

As outlined above, Guest and Bos-Nehles (2013) proposed a four-stage model of HR implementation: (1) decision to introduce HR practices, (2) their quality, (3) their implementation, and (4) the quality of implementation, placing the first two within HR's remit and the third and fourth in line managers' domain. However, when HR practitioners introduce changes within their own function, all four stages remain within HR. Digitalization involves diffusion of innovative technologies (Kohli and Melville 2019; Mirvis et al. 1991; Trullen et al. 2020). Prikshat et al. 's (2023) diffusion model identified four stages, initiation, adoption, routinization, and extension, with the latter stage signaling changes made after initial implementation in response to feedback received and problems encountered. Since initial discussions regarding each stage happen within HR, its managers' engagement will influence the practices implemented.

2.7 | Consequences With HR Subfunctions

Beyond early computerization of paper files, HR practitioners have tended to digitalize e-recruitment, e-selection, and e-learning first (e.g., Johnson et al. 2017; J. Zhang and Chen 2024). Strohmeier (2020) identified recruitment and compensation as early subfunctions to digitalize operational applications, added performance management and learning and development at the strategic alignment stage, and viewed HR analytics and employee relations as contributing most to strategic integration. Scholars argued that use of big data facilitates strategic decision making, thus advancing HR's role as a business partner (Margherita 2022; Diefenhardt et al. 2024).

2.8 | Changing Dynamics of Implementation

Conceptual articles (Strohmeier 2020; Bondarouk et al. 2018; Prikshat et al. 2023) have posited that HR implementation is a dynamic process involving change over time. Although cautioning that organizations can remain at one position or even move backward, Strohmeier (2020) noted their strong tendency toward moving up the continuum of consequences. Using structuration theory, van Mierlo et al. (2018) argued that in practice HR implementation is iterative, turbulent, disorderly, political, structure-changing, and in need of legitimacy to be routinized. Wang et al.'s (2024, 10) model succinctly described its bi-directional relationship, "the implementation of HR analytics would give rise to emergent new structures and these new structures would in turn influence the implementation of HR analytics." Similarly, HR studies using dynamic versions of diffusion of innovation theory have examined disruptions over time as managers sought to implement, modify, and refine new policies and practices (Trullen et al. 2020) and assimilate AI into HR (Prikshat et al. 2023). As these studies are all conceptual, there is a need for empirical work in HR that puts their ideas to the test.

The present paper focuses on how HR practitioners implement digital technologies within their function. It seeks to further develop TOP model applications to digitalization, argues that implementation proceeds in stages for each HR subfunction, and examines the different types of activities that arise at each stage, over time, and HR's role in them.

3 | Methods

Our primary aim was to provide rich, detailed insights from the perspectives of HR practitioners engaged with digitalization, capturing the underlying patterns, themes, meanings, and contextual factors that shape their professional practices. To accomplish this aim, we used a qualitative methodology (Fendt and Sachs 2008; Gioia et al. 2013; O'Reilly et al. 2012) which allowed us to build a richly textured understanding of practitioner experiences. This exploratory approach is recommended for topics that "have attracted little research or formal theorizing to date, or else they represent new phenomena in the world" (Edmondson and McManus 2007, 1161). The research team's members conducted 22 in-depth, semi-structured interviews with HR leaders in companies in Europe and the US, recruited through author contacts and snowball sampling. We first sent them a list of 51 terms associated with digitalization with the introduction, "Below I have included many words that fit within our broad definition to make sure we are talking about the same terms." In the interviews, we used twelve open-ended questions to ask which digital technologies they used or planned to adopt, if any deserve special attention, whether HR, jobs within HR, the nature of HR, or employee relationships within HR had changed as a result, if new jobs had emerged or existing jobs been augmented or replaced, whether the function organized itself differently or competed differently, and future changes expected as HR became more digital.

The interviews took place via video conference (mainly Zoom and Webex) from late 2020 through late 2021. All interviewees agreed to have their interviews recorded, each averaged 60 min, a professional transcriber converted them into text, which served as the basis for data analysis. As data-gathering progressed, we modified questions based on initial assessment of observed trends. Demographically, seven interviewees were based in Europe and 15 in the U.S., with 14 females and eight males. Position-wise, eight were Vice Presidents, six directors, three managers, four professionals, and a CEO of a small executive search firm. Their average work experience was 21.8 years. With 8 Bachelor's and 14 Master's degrees, they were an educated group. Their companies' average size was 36,200, ranged from 1 to 270,000 with a median of 11,246, from a wide distribution of industries.

Our expectation of a trend from bureaucracy toward more flexibility was supported by the first several interviewees, who nevertheless reported their companies responding to digitalization in different ways. Midway through the interviewing, the first author summarized his reading of the main themes,

circulated them to coauthors for feedback, then set the document aside. Coding began a year later and took 6 months. When final codes were agreed, we compared the 10 midway themes with the ten second-order themes in the data structure table. Eight of the 10 were consistent between the two, with employee engagement not represented and consequences of technology adoption not explicit midway and ethics and attitudes of younger employees not appearing in the data structure. Toward the end, we connected differences in digitalization with the consequences of technology adoption depicted in Figure 1, which raised the possibility that each HR subfunction experienced a similar orderly progression of digitalizing phases but that the content differed for each.

Adopting an interpretive framework (Gioia et al. 2013) and using NVivo qualitative analysis software, the first and fifth authors independently applied an open coding methodology to the transcripts. Allowing groupings to arise inductively from classifications created (Corbin and Strauss 2008), they reduced 85 initial loosely grouped codes to 49 first-order categories. Seeking to connect emergent concepts to existing literature where possible, they compared their respective codes, reached a consensus on ten second-order categories, then reduced them to five aggregate dimensions, presented in Table 1. When the paper's other authors reviewed the second order and aggregate dimensions, the results withstood scrutiny, with modifications to clarify some dimension labels. The resulting data structure served as the basis for conceptualizing emergent trends.

4 | Findings

The findings present themes emerging from the interviews with HR executives and managers. Starting with the data structure from the coded transcripts, we then consider the TOP components, their interactive effects, their consequences, relationships of consequences with stages and subfunctions, and digital implementation as unfolding over time.

4.1 | Data Structure

As Table 1 shows, five aggregate dimensions emerged from coding: (1) the primary digital technologies used in HR, (2) their applications, (3) dimensions of organization structure, (4) executive and manager challenges and employee skills, and (5) the consequences of digitalization within HR subfunctions. The data clearly showed HR moving from bureaucratic service provider toward flexible and adaptive strategic partner. As an Assistant Vice President of HR related,

> I think we're moving toward embracing technology and tapping into or learning those skills, right, and learning how, which is changing everyone's roles...So we're changing our structure and how we deliver service to leverage the technology that we have.

However, no widely agreed pre-determined formula for implementation appeared nor HR subfunction to start with. Most interviewees reported experiencing the changes as piecemeal.

4.2 | TOP Dimension Components

Technology experimentation usually occurred when an HR leader, recognizing its potential to improve an area's effectiveness or efficiency, decided to try a *technology application (T)*, initially with the goal of improving organizational efficiency. Applications that emerged from the base technologies included using AI/ML to automate jobs, algorithms and bots to manage self-service centers, HR analytics to aid decision making, and software to enhance other HR capabilities. For *organizational structure (O),* substituting a digital technology for an analog activity strained the existing structure. Pressure arose to discard rigid hierarchies and silos to facilitate agility, emphasize horizontal communication networks over vertical chains of command, and change the structure and content of jobs. A Vice President of HR reported,

> What I've found is it's helped to break down silos. HR used to be very silo-driven. You'd have your benefits group, your talent acquisition group, your comp group. You can talk to each other more now. Because the benefits person can see what's going on on the talent front, talent can see what's happening on the benefits front as well. They can collaborate across functional areas a lot better.

For the *people (P)* dimension, efforts to import a technology created demands on executives to drive adoption, managers to implement change, and employees to exercise new technological skills. A Director of HR listed desirable skills: *"Being able to cope with changes, being digitally strong, not knowing a particular tool, but knowing how to learn, having a digital mindset, knowing how to adapt to different digital tools and understanding what technology can offer."* As the quote illustrates, anticipating changes to existing jobs, understanding differences created by a new technology, and recognizing efforts needed to learn it heightened stress levels for many employees.

4.3 | TOP Component Interactive Effects

Rather than acting as discrete entities, the technology application, structural changes induced, and executive and managerial actions interacted to produce the consequences observed. Absent one or more of the three dimensions, TOP's impact was minimized. Interviewees provided numerous illustrations. The most often-cited was organizations adopting communication technologies shifting to remote work that enabled cross-functional teams to perform virtually, creating the need for new structures and new participant skills to be effective. Relating an increasingly common situation, one interviewee's company decided to adopt HR analytics to improve its decision making capabilities. Managers immediately realized that the organization lacked positions designated to undertake the task and employees with the skills to execute, preventing them from using the technology effectively. Subsequently, when positions were created, people hired with the requisite skills initiated a process to acquire a different software package better suited to the task. A COO with HR reporting to her illustrated a similar situation involving technology, structure, and analytics skills:

TABLE 1 | Data structure from coding HR interview transcripts.

10 second-order themes	5 aggregate dimensions
HR analytics/AI-ML • HR analytics, big data, dashboards, visualization • AI-ML, automation, bots-call centers, self-service • Other digital technologies (e.g., blockchain, 3D printing)	Digital technologies
Applications of technology • AI/ML automate jobs • Algorithms/bots construct self-service centers • HR analytics inform decision-making • Software-websites-mobile apps enhance HR functions (Workday, ERP), measure productivity	Applications of digital technologies
Organizational structure • Need for agility • Networks/flexibility over hierarchy/authority	Organizational structure
Jobs created—augmented—eliminated—outsourced	
Executives and managers • Drive technology adoption • Implement technological changes • Address employee resistance • Adopt business partner role	Executives and managers drive technology adoption and implementation; employees acquire the required skills and apply the technology
Employees • Changing skills needed • Train for new skills • Skills self-efficacy • Apply technology	
Knowledge/Skills/Abilities • Use of AI, analytics, and other digital technologies • Knowledge of HR • Business acumen • Continuing value of empathy and social skills	
Consequences for each HR subfunction • Operational (Operational) • Strategic alignment (Relational) • Strategic integration (Transformational)	Consequences... • Operational (Operational) • Strategic alignment (Relational) • Strategic integration (Transformational)
Digitalizing HR subfunctions • Strategic HR • Talent acquisition • Total rewards • Learning and development • Talent management • HR analytics	...Applied to each HR subfunction • Strategic HR • Employee engagement • Talent acquisition • Total rewards • Learning and development • Talent management • HR analytics
Employee well-being/engagement	

> Ten years ago, we didn't have an analytics division... We've reinstituted some process redesign work because what we're finding is you can build the right technologies, but if you don't redo the process with the people, that's a problem. There's a shift with human capital management or the traditional HR, how they approach the workforce.

4.4 | TOP Model Consequences

Our interviews supported the notion that implementation proceeded from one consequence to the next as technologies were adopted, organizations adapted, and people responded. Transitioning from analog into early-stage digitization, HR subfunctions began to incorporate individual technologies intended to increase operational efficiencies and cut costs. Successes at this stage encouraged experimentation with additional technologies. A Senior HR Generalist commented, *"As HR professionals get better at using technology to their advantage, they can get away from being that administrative helper."* Adding technologies, HR moved into middle-stage digital implementation, where an expanded set of applications fueled leader momentum to strategically align multiple technologies in individual HR subfunctions. An HR Project Manager observed, *"We've been in a massive simplification and consolidation journey just to react to all of the crazy technical sprawl."*

The smoother HR practitioners' experience at this stage, the more willing those running subfunctions became to further digitalize. However, smoothness did not always correspond with productivity gains, which became more nebulous and harder to measure as subfunctions moved from operational to strategic alignment to strategic integration stages. A Vice President of HR commented, *"We always look at a way to digitalized stuff...for sure there will be change and for sure we will do it a different way. I don't know what it is."*

Rather than preponderate at advanced-stage digitalization, most respondents placed their functions at early or middle stages. Even so, in articulating activities in-process, planned, or desired to further digitalize, they helped profile the more advanced stages. Thus, our descriptions indicate the direction most saw digitalization heading. Strategic integration in pursuit of digital transformation posed significant challenges to existing policies and practices. Integration within a subfunction, while possible, was impeded when other subfunctions were at earlier stages. In that sense, integration was a function-wide goal involving a wholesale shift in how HR was managed, thus deserving the title "transformational." A Global HR Business Partner predicted,

> [These new technologies] will result in HR not necessarily being that up-front people person, but more of a wizard behind the scenes, behind the curtain. More than likely, the person HR will be more of a partner to the people leaders or managers within an organization versus being an administrator to the employees to help them with general inquiries. It's going to evolve quite a bit with HR being more focused in a strategic-type position.

Movement from operational toward strategic integration stages indicated increased quantity and quality of digital work—quantity in added digitized activities and quality in increasingly higher value-added contributions. Strategic integration relied on HR executives implementing a business partner role using HR analytics to derive and deliver insights on employees to top management. A Director of HR said, *"So our job now is to look at the so what of the data and...the insight from data analytics."* It employed a substantially revised HR operating model that facilitated agile and interdependent structures within and across subfunctions and between HR and other company functions. Within HR, configurations of generalists and specialists changed, numbers of employees covered by each professional expanded, and awareness of strategic and financial consequences of decisions increased. Managers adopted a digital mindset, employees developed analytic and technological savvy, and objective performance measures were incorporated. As a Senior HR Vice President explained,

> There was a drastic shift from my predecessor to now... in the mindset. The expectation is really that I'm a businesswoman first, with a specialty in HR versus in people...The level of contribution expected is different on a multitude of topics...I don't just wait for people to come to me. I'm now at the business reviews and.... understanding and setting the tone for knowing the business...So that I can proactively say, well, if this is where we are, then this is what we need to do now.

4.5 | TOP Model Consequences With Corresponding Stages

As the HR implementation and diffusion of innovation literatures depicted, digitalization occurred in stages. When reviewing the transcripts, we realized that interviewee reports would enable us not only to surmise that stages existed but also to develop considerable detail on technologies adopted. With this recognition, we perused the interviews to clarify distinctions and extract examples to illustrate each stage for each subfunction. As the bolded text in Table 2 indicates, digital implementation occurred in pre-, early-, middle-, and advanced-stages, with the latter three corresponding with the operational, strategic alignment, and strategic integration consequences of technology adoption. The activities listed in Table 2 represent types of applications used rather than definitive tightly constrained pathways. Stages differed across companies, HR subfunctions within companies, and within subfunctions at different points in time. To flesh out activities described and save space that otherwise would require extensive supporting quotes, the italicized text accompanying each stage provides illustrative quotes from interviewees.

TABLE 2 | Stages of digital implementation for each HR area with illustrative quotes from interviewees.

From HR planning to business partner
Pre-digital: React to effects of organizational decisions on employees, track succession planning paths
Early stage: Invitation to join top management team *I'm sure large companies that really utilize technology from an HR perspective to their full potential are already doing this. My perspective about HR is we're not really doing much with it.*
Middle stage: Initial contributions to business decision making demonstrate CHRO value *At what level or layer would that HR partner be needed? I think that's still well off. Organizations are evaluating still. With these new deployment technologies, our people leaders are able to see quite deep within an organization.*
Advanced: Important contributor to corporate strategic planning and HR operational execution *It's definitely focused on managing the board, being a real partner with the CEO and management of the board and our shareholders...So it's really just a big shift in the mindset. Where is the business headed? I also have global communications and reporting in my reporting line.*
From employee relations to employee engagement
Pre-digital: In office full-time, in-person inquiry responses, emphasis on personal relationships with employees, employee record keeping on premises
Early stage: Incorporating technology in mediating relationships with employees *We always assumed that the best is face-to-face, but then we found out that our younger population would prefer video.*
Middle stage: Call centers, migration to off-the-shelf software solutions like PeopleSoft, Oracle, and SAP that required extensive IT adjustments *I think many large organizations are looking at HR shared service. By the way, it also includes self-service by some of the managers as well. So, for example, they can book their own holidays....*
Advanced: Hybrid work, remote teams, shared service centers, from call centers to self-service using AI-informed bots for employee inquiries, HCM system with employee information in cloud, pulse surveys, individualized service, consolidation toward software solutions like workday with built-in AI *Artificial intelligence helps us manage our employee workforce needs, wants, and service. And so think of AI almost as a call center...trying to pick up trends to understand what the employees are calling on, then that helps inform us on our employees' needs or feedback they need to give us about what we can modify and partner with them on.*
From recruitment and selection to talent acquisition and retention
Pre-digital: Newspaper advertising, job fairs, application form processing, initial interviewing
Early stage: Use of websites like Monster and posting openings on company website *Different sourcing technologies, we don't use them robustly. We have tested some out, kind of selectively, but really we need the ability to proactively identify people that you think have the right skill sets.*
Middle stage: LinkedIn, Facebook, and Indeed postings *In the area of recruiting, you're able to leverage many more tools that are on the web today. It used to be Monster. Then it was LinkedIn. Now it's Indeed. Those are the softwares that really help in the candidate search and help make it efficient.*
Advanced: Use of social media to identify candidates, algorithmic key words to winnow applications, software to filter for bias in job listings, "heat maps" to analyze data on candidates *With LinkedIn–there's so many different algorithms at our disposal. People that have their information online and out on the web, we can actually reach out to them even though they're not looking for a job. We look at a lot more data...Recruiting looks at heat maps to see where candidates come from and then where successful candidates come from.*
From compensation and benefits to total rewards
Pre-digital: Track compensation decisions by managers and administer changes, payroll processing, open enrollment
Early stage: Payroll automation and centralization and use of external vendors *There should be and can be some level of automation on the payroll side, for example. I don't think most employers are there just yet.*
Middle stage: Use of apps to add flexibility to benefits offerings, compensation incentives based on key performance indicators *There's been more software developed over time to help employees be better consumers of benefits plans. Every HR system has a funny bot little person that you can chat with and help answer your questions and make your selections.*

(Continues)

TABLE 2 | (Continued)

Advanced: Design of competitive reward and incentive schemes to attract and retain skilled employees, flexible benefits plans that include guidelines for remote work and attention to wellness, use of analytics to test equity in compensation

The other area that we are trying to embrace very much are mobile apps for our employees to access the HCM and their information to answer quick questions about their pay, to process an address change. But also, how can we leverage a mobile app to provide wellness when it better suits our employees?

From training and development to learning and talent development

Pre-digital: In-person training, on- and off-site

Early stage: Site or division-based computerized learning programs

So you have to be able to train effectively remotely. So I think those different types of training programs will be more in the future as well.

Middle stage: Company-wide desktop online learning modules

I think for trainers, you need someone who can develop online training. They need to be well versed in the different programs that are available to create online training. Can we package this in an online training that we make available whenever the employee can take it?

Advanced: E-learning, mobile apps, podcasts, AR/VR, upskilling

There are a lot of players in the HRM world... you can go look for the best of different packages and bring them in. The technology piece, some people want to sit down at their laptop to do it. They want an app on their phone so they can take a quick course. Other employees want to go sit in a classroom. The technology allows you to bring the learning to people where they want it and when they want it.

From performance appraisal to talent management

Pre-digital: Administer annual performance appraisals, emphasis on evaluation

Early stage: Use computerized system to monitor link between performance evaluation and compensation decisions

The performance appraisal is done face-to-face, all of the comments are then inputted online, and then we use that to then calculate bonuses and performance ratings. You can also use those systems to ask others for feedback.

Middle stage: Transfer data on performance from local to cloud, move responsibility for employee HR oversight to direct supervisor

Another way we use digital tools is...a platform exclusively for performance appraisal so that what is said, agreed and validated is stored in both a digital tool and a record.

Advanced: Emphasis on coaching/mentoring, comprehensive cloud-based platform to track performance and record accomplishments and feedback from manager and co-workers, monitor remote employee activity and rate of productivity

The relationships are more, I'm a coach, I'm a mentor, I am an advisor, and I think that's definitely increasing over the last few years where, you know, I think the culture, the dynamics of people in the workforce, they want that.

From HR record keeping to HR analytics

Pre-digital: Document employee handbook or performance issues, track turnover and absenteeism

Early stage: Attempt to create ties across HR software programs that each manage an HR subfunction, Excel-based analysis

I still think that HR is behind "the business" in terms of structuring, collecting, and using data.

Middle stage: Create and staff positions for quantitative analysis within HR

With data as the king of the HR function, I think we're going to see more in the realm of big data type activity, The whole goal will be to get HR folks out of the realm of discovering and synthesizing the data and more in using it to make intelligent decisions.

Advanced: Quantitative trend analysis enables input into decision making, on-demand dashboards, use of visualization to clarify patterns in data

It's a very powerful tool. It's able to pull out of the data sets, any visualization you want. I could see across the map, hot spots of where our employees are. I can click on that map of a certain hot spot and be able to even filter down further. Maybe I want to see the layers.

4.6 | TOP Model Consequences With HR Subfunctions

HR executives often revised subfunction titles as they moved toward the strategic integration stage to more dynamically interpret their capabilities and purposes. According to our interviewees, the first digitalized subfunction, often viewed as HR's primary corporate contribution, was attracting and retaining high-performing employees. Next was learning and development, as employees sought online training that was easily accessible, self-

paced, adapted to mobile devices, and available at a time and place of their choosing. An HR Business Partner presented her company's approach to talent development,

> We have what we call the talent marketplace. And so we're at a bit of a turning point over the last two years in this transformation. And there is a big focus on upskilling and really kind of changing some of the jobs, recognizing that we need to help develop our people in different ways and explore new avenues within the company.

Overlapping total rewards and employee engagement, self-service centers delivered automated responses to employee inquiries by algorithm-guided bots using machine learning to improve accuracy. HR analytics, the operation many respondents viewed as their next priority, lagged in implementation primarily because HR personnel lacked the necessary quantitative skills. An HR Vice President schooled her direct reports,

> So looking at data, which they hate, and they all want to smack me because I make them do it. But hey guys, learn how to pull the data, learn how to look at it and analyze it. And then that's what your value to the business is.

4.7 | Digital Implementation as Dynamic

Interviewees clearly assumed that digital implementation took place in dynamic stages over time, as organizations acted to accommodate a desirable technology by adjusting structures, incorporating new skills, and modifying the technology itself to fit organizational needs. Building on a situation described previously, the respondent COO with HR reporting to her offered a useful illustration of adopting HR analytics over time. First came recognizing the value of analyzing data, realizing the skills did not exist in-house, and making initial plans to address the deficits. Over time, the organization developed new positions, defined their responsibilities, hired non-HR people for the needed skills, and set up processes to use the information generated. Moving through TOP configurations, the organization identified misalignments, including a deficient software package, set up an HR analytics subfunction, and supplemented analyst technical skills with knowledge of HR services. Together with other digital projects, these moves enabled the new subfunction to transition its operational focus toward seeking strategic alignment while anticipating the need for additional iterations. As a Chief Human Resources Officer observed,

> Maybe it's just a state of building the plane while you're flying it. If you could say, 'Ideally, how do I want this plane to be assembled?' you'd probably come up with a great design. Otherwise, you're just continuously improving it over time, which is what I've found us to be doing at the moment. I think that's a reasonable approach. You can't just put everything on hold while you spend a few months to think through your existing systems and how you can improve them.

5 | Discussion

Exploratory qualitative approaches seek to build theory from data. This study's underlying premise is that HR managers play a vital role in implementing HR initiatives, their role needs attention, and incorporating digital innovations within HR itself is a logical place to start. The first three boxes in Figure 2 depict the five aggregate dimensions from Table 1 as a conceptual model representing a theory of HR digital implementation, with implications for practice. The model builds on the emerging stream of studies (Bondarouk et al. 2017; Prikshat et al. 2023; Zhou et al. 2022) that posited connections between the TOP components and operational, strategic alignment, and strategic integration consequences of technology implementation (Lepak and Snell 1998; Strohmeier 2020). We empirically explored the practical utility of the largely theoretical TOP components. Although previous studies mainly presented each component as a discrete entity, we found support for Bondarouk et al. (2017) and van Mierlo et al. 's (2018) notions, posited but not tested, that their interactions —the triangle formed jointly by the three components—are critical to understanding their implementation and joint effects on consequences.

While academic studies have either focused on a specific technology (e.g., Prikshat et al. 2023; Malik et al. 2023; Hillebrand et al. 2025; Belizón and Kieran 2022; Margherita 2022), or regarded it as a general category (e.g., Bondarouk et al. 2017; Cayrat and Boxall 2023), we sought to amplify the practitioner perspective by targeting the two primary packages our interviewees viewed as central to their considerations, AI/algorithms/automation and HR analytics/big data, keying in particular on AI and HR analytics. The challenges of implementing AI pushed HR managers to pursue organizational agility (Lee and Edmondson 2017) while AI-facilitated automation created pressure on employees from actual or feared job elimination and requirements for upgraded skills (e.g., Prikshat et al. 2023; Malik et al. 2023; Hillebrand et al. 2025). HR managers used analytics to serve people-related decision making, utilizing newly created analytics positions (Belizón and Kieran 2022; Shet and Pereira 2021) that required previously unneeded quantitative skills (Vargas et al. 2018). Managers of both AI and analytics benefited if they addressed resistance by training employees to use the new required skills (Fernandez-Vidal et al. 2022).

As Figure 2 indicates, without the base technologies represented in the Digital Technologies box, there is no digital story to tell. From there, digitalization starts when HR executives become aware that a technological application can potentially improve an HR subfunction's operational performance. Initial introduction of a technology (represented by the larger size of the "T" in the initial TOP box) generates TOP dimension interactions connecting to an initial set of operational consequences. Practitioner learning from that introduction helps to implement a second technology, again involving TOP dimensions and

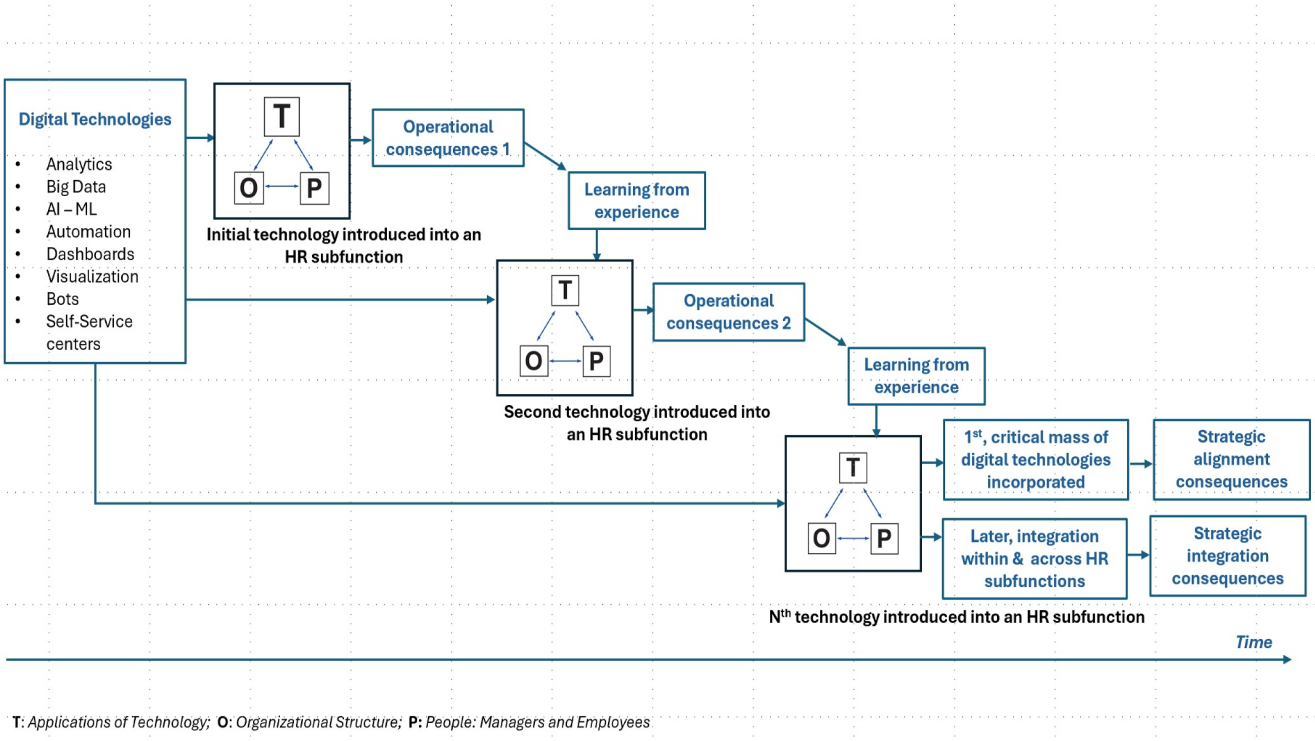

FIGURE 2 | Components and consequences of digital implementation in HR management. [Colour figure can be viewed at wileyonlinelibrary.com]

operational consequences. The added experience then facilitates applying additional technologies to operational tasks in subfunctions (Strohmeier 2020; J. Zhang and Chen 2024), especially if they generate operational improvements. The upper row of the *N*th technology boxes moves the model ahead to a time when several technologies are incorporated and HR executives recognize the need to organize them into a strategically aligned set, benefitting from synergistic effects if the employed technologies show coherence (Lepak et al. 2006). Finally, the lower boxes of the *N*th technology configuration anticipate a later point in time when practitioners seek to advance from strategic alignment to digitally transform the total HR function through integrating technologies within and across HR subfunctions. Deriving transformational effects from full digitalization requires a commitment to implementing a strategic integration strategy. Ruta's (2009) illustrative study showed this process in action as HR, by reorganizing its structure and training its people to contribute to introducing a digital portal in a Hewlett Packard Italian subsidiary, shifted from operational to business partner status, which enabled them to proactively offer digital HR solutions to the larger organization.

Our findings suggest that HR managers implement digital technologies for each subfunction in dynamic, iterative ways. Figure 3 builds the critical time-based dimension into our model, linking the TOP framework's components and consequences with van Mierlo et al. 's (2018) emphasis on understanding how HR implementation develops over an extended period of time. This linkage converts Figure 2's depictions of how HR practitioners introduce and inculcate new digital technologies onto a timeline. Figure 3 portrays a dynamic process in which the TOP dimensions activate when HR managers introduce a new technology, adjusting their organization and people to enable the technology to establish an initial foothold. Barring rejection if the technology does not gain sufficient acceptance, the more likely result is that practitioners adapt, then assimilate it into the subfunction. TOP upgrades to agility and skills, created in response to the new technology, clear a path for improvements at time two informed by initial use, this time at a more advanced level. The subfunction moves through further iterations as it responds to misalignments among the TOP factors, with each iteration pushing it toward higher stage consequences, transitioning over time from initial operational applications to strategic alignment then, with increased technological, organizational, and skill development, to strategic integration by expanding its capacity to incorporate digital technologies. With increases in experience, the expertise developed by HR practitioners enables the subfunction to repeat the process for additional technologies, which may be tackled sequentially or, given frequent pressures to accelerate activities, simultaneously.

Table 2 identifies pre-, early, middle, and advanced stages of consequences and the technologies most relevant to HR practitioners in each subfunction and at each stage, supported by quotes from interviewees to illustrate the activities at each stage. As indicated, each subfunction undergoes each consequence in the order presented (Guest and Bos-Nehles 2013) as its level of digital implementation increases, with early stage corresponding to operational consequences, middle stage to strategic alignment, and advanced stage to strategic integration. Strategic HR sits atop the subfunctions as the primary vehicle HR executives identify as elevating their role to business partner (e.g., Cayrat and Boxall 2023; Fernandez-Vidal et al. 2022). Cumulatively, progress with digitalization in multiple subfunctions moves the entire department up the stages of consequences toward digital transformation.

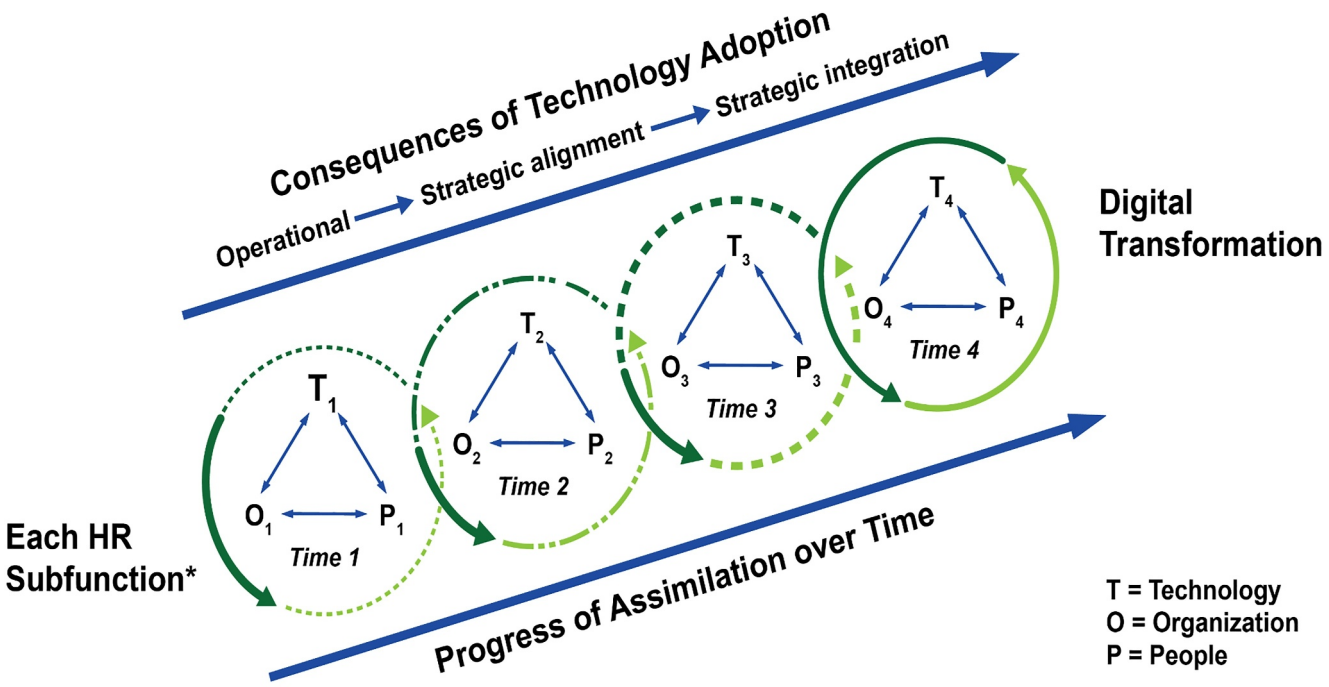

FIGURE 3 | The digitalization of HR subfunctions as additional technologies are added. [Colour figure can be viewed at wileyonlinelibrary.com]

Investigating the practitioner perspective on digital implementation within HR, this study offers four main contributions to theory and practice. First, it offers the first empirical tests to our knowledge of the effects of TOP model components on consequences of adoption (Bondarouk et al. 2017; Prikshat et al. 2023; Zhou et al. 2022). The results support the model's application to the practice of HR implementation. Although unable to quantitatively test TOP dimension interactive rather than additive effects, our qualitative analysis indicated that changes in one dimension evoked responses in the other two that jointly affected the consequences of implementation. By extension, the weakness of one or more TOP dimension largely stymied further digitalization. Second, this study examined how HR practitioners in seven HR subfunctions at different stages of development used a host of technologies to digitalize, with varying paces of implementation, and illustrated their use in practice in Table 2. Academic literature had focused primarily on digital technologies and less on how subfunctions implement them. In one of the few that studied HR subfunctions, Budhwar et al. 's (2022) review of how implementing AI affected five subfunctions could find only two articles in HR journals and one in decision sciences. By contrast, HR practitioner outlets have intently examined it (e.g., Maurer 2024; Poitevin and Rizaoglu 2023). A close study of Table 2 indicates that HR practitioners start with a task rather than a technology and apply a technology as a means to improve task performance.

Third, this study aligns with stage theories of HR implementation (Guest and Bos-Nehles 2013) and diffusion of innovation (Mirvis et al. 1991; Prikshat et al. 2023). Early, middle, and advanced stages of digitalization match the consequences of adoption well and offer a way to describe them without needing academic terminology. Figure 2 illustrates the stages undertaken, from inculcating an initial digital technology into a subfunction through to pursuing a fully strategically integrated path to function-wide digital transformation. Table 2 presents types of technologies used by HR departments and subfunctions at each stage as they progress along a continuum of consequences from operational to strategic alignment to strategic integration as they digitalized. Finally, this study emphasizes the dynamic, iterative nature of technology implementation over time. Figure 3 illustrates this time-based perspective, presenting each HR subfunction in its own trajectory as multiple iterations of TOP dimension implementation move it along the continuum of consequences toward digital transformation. Although structuration theory (van Mierlo et al. 2018; Wang et al. 2024) and some applications of diffusion of innovation theory (Trullen et al. 2020; Prikshat et al. 2023) have conceptualized this feature's application to HR, our findings indicate the benefits of giving temporal perspectives a larger role in the advancement of theories about HR digitalization. Since HR professionals take its dynamic nature as a given, any treatment that excludes it is missing a major characteristic of HR digital implementation.

5.1 | Directions for Future Research

Digital technology's arrival as a wave of applications across a spectrum of business functions has created "broad technology adoption pressures" on managers that cumulatively augur a digital transformation (Koljonen and Chan 2024). Their flexibility offers implementers opportunities to combine technologies that are more likely to be transformative than individual

technologies by themselves (Ciarli et al. 2021). A useful line of inquiry is to capture the effects when HR practitioners adopt multiple technologies cumulatively.

A potentially fertile area is to study how TOP's organization and people dimensions interact with each digital technology and each consequence. The present study proposes that processes of technology trial and adoption used by HR practitioners differ depending on the technology, the subfunction, implementation challenges, and the fit among them. AI and HR analytics, for example, share an emphasis on upskilling but otherwise differ in that AI targets agility and automation while HR analytics targets information for decision making. Some digital technologies may have more relevance to HR practice than others, consistent with Strohmeier's (2020) assertion that HR analytics and employee relationship management are key contributors to strategic integration as well as claims that AI applications are critical to the strategic development of almost all HR subfunctions (Prikshat et al. 2023; Budhwar et al. 2022). The body of knowledge considering how HR subfunctions implement digital technologies has several reviews and theory papers but fewer empirical studies (Edwards et al. 2024; Bujold et al. 2024; Budhwar et al. 2022).

As promising areas for investigation, future research could examine whether (a) differences exist in stages of digitalization between HR subfunctions within and across organizations (Lepak and Snell 1998; Strohmeier 2020), (b) such differences correspond with the types of activities listed for each HR subfunction, (c) technology applications have differential relevance for HR subfunctions (Mirfakhar et al. 2018), (d) TOP factors influence (d1) all three consequences (Bondarouk et al. 2017; Prikshat et al. 2023; Zhou et al. 2022), (d2) at each stage of implementation (Prikshat et al. 2023), and (d3) in all HR subfunctions (Bondarouk et al. 2017), (e) digital changes in one subfunction facilitate changes in others (Prikshat et al. 2023), (f) transformation of the complete function follows different dynamics than individual subfunctions, and (g) digitalization within the larger organization affects and is affected by HR's experience.

Two extensions would expand the model's usefulness. First, investigate whether practitioners in other business functions such as marketing, finance, and manufacturing experience similar stages of technology implementation, e.g., steps leading to Industry 4.0 implementation. Second, examine whether Figures 2 and 3 portray how HR departments implement any innovation, digital or not.

5.2 | Practical Implications

Advanced-stage digital implementation is aspirational for many if not most HR departments. Knowledge of TOP components, consequent outcomes, and relationships among them can help HR managers better envision digitalization dynamics and gain a deeper understanding of how to effectively implement digital technologies. Tactically, they can use Table 2 to learn which stages of consequences their subfunctions occupy and the technologies needed to reach the next stage. To achieve advanced-stage digitalization, HR practitioners will need to (1) thoroughly digitalize each HR subfunction, (2) build collaboration across subfunctions, (3) connect within-subfunction digitalization to a comprehensively integrated digital HR, (4) facilitate digital ties with other company functions, and (5) use virtual networks of professional associations, consultants, and vendors to track emerging trends in the larger digital ecosystem (e.g., Snell et al. 2023).

Strategically, extracting from Table 2 and Figure 3, HR executives and managers seeking to achieve an integrated digital HR function can prepare to (1) enact strategic roles as internal consultants, coaches, and business partners, (2) automate repetitive HR services, (3) use social media to build employer branding and apps like LinkedIn and Indeed to recruit the most qualified candidates, (4) ensure that benefit programs include policies for remote and hybrid work and address mental health concerns, (5) offer online training enabling employees to engage at a time, pace, and place of their choosing, (6) emphasize developmental over evaluative performance reviews, (7) use HR analytics to inform decision making, (8) add business acumen and technical competencies to their people skills, (9) manage simultaneous processes of job creation, elimination, upskilling, and outsourcing, (10) employ human capital management systems like Workday and ADP Workforce that provide cloud-based software and mobile apps with built-in AI-informed capabilities, (11) interpret digital implementation as a long-term process using multiple cycles of TOP interactions to move incrementally toward higher levels of digitalization, then (12) realize that movement from strategic alignment to strategic integration requires a full-scale mental and behavioral commitment to digitalize the function.

5.3 | Limitations

The study's base of interviews with 22 HR professionals, largely derived from author contacts and snowball sampling, limits our ability to generalize confidently beyond this sample. HR is more digital now than it was when interviews occurred. Since ChatGPT's release in November 2022, predictions that AI will significantly change HR are yet to be realized. The findings are contingent on the validity of the data structure presented in Table 1. Our concentration on HR executive and manager experiences allowed limited insight into group, organizational, and ecosystem levels. Interviewees may have presented their functions as more digitally sophisticated than they were. Finally, since our study did not deal with process dimensions, it cannot provide guidance on how to move from one stage to the next.

6 | Conclusion

The present paper focused on how HR managers experienced the implementation of innovations within their function, a neglected area of study, using digital technologies as highly relevant innovations. Our study indicates that HR managers can best navigate digitalization by seeking to bring the TOP dimensions into alignment, evaluating the effects that arise as these dimensions interact with one another, recognizing that

each of seven HR subfunctions uses different technologies to digitalize, with different paces of implementation, assessing where their HR department and subfunctions stand on a continuum progressing from operational to strategic alignment to strategic integration as they digitalized, and viewing technology implementation as an iterative process requiring adaptation as the dynamics change over time.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.