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Bridging Bytes and Behaviors: Unraveling the Multifaceted Interplay of Technology and Employee Dynamics Over Time Through Text-Mining and Systematic Literature Review

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ABSTRACT

This study investigates the intricate relationship between technological integration and its consequences for employees, focusing on the evolving impacts of advanced technologies on organizational operations and workforce dynamics from 1983 to 2022. Utilizing a sophisticated method combining rigorous text-mining analysis and a systematic literature review, the research analyzes an extensive dataset of 7,000 articles to track the progression of technology-related topics and keywords within the literature. The findings reveal a dual nature of technology's impact on the workforce. On one side, technological advancements are associated with challenges such as increased turnover intentions, anxiety, and health concerns. On the other, there is an emerging shift towards understanding the nuanced differences between technology-mediated interactions and traditional face-to-face engagements. The study underscores the necessity of strategic technology integration that not only enhances productivity but also safeguards employee well-being. Emphasizing the need for a redefined approach to work-life balance, the research sets a foundation for future explorations into the multifaceted effects of technology within organizational contexts, specifically recommending a deeper examination of individual information behaviors and sector-specific technology impacts in response to technological advancements. This refined focus aims to contribute more directly to information science by addressing how these technological integrations influence information behaviors across various organizational layers and over time.

Keywords: evolution, management, systematic literature review, technology, text-mining

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1. INTRODUCTION

Over the past decade, the surge in digital technology adoption has transformed organizational operations with various integrated advanced tools such as big data analytics, cloud computing, and artificial intelligence (AI) (e.g., ChatGPT, Gemini, Claude, and DALE III; Bharadwaj et al., 2013; McKinsey & Company, 2023; Tilson et al., 2010). Digital transformation (DT), described as organizational adaptations prompted by digital technologies, empowers firms to rejuvenate their business models and equips them to navigate a modern volatile business landscape (Hanelt et al., 2021; Warner & Wäger, 2019).

This technological pivot has marked our lives and work, with a significant body of research documenting these shifts (Fichman et al., 2014; Kim & Roh, 2023). As technology continues to evolve, understanding its future impact is crucial. Notably, 40% of all organizations are escalating their AI investments and anticipating transformative outcomes, especially in knowledge-driven sectors (McKinsey & Company, 2023; OpenAI, 2023).

Scholars and practitioners are becoming increasingly interested in DT (Westerman et al., 2011). However, this concept is often misinterpreted as a mere technological evolution. DT encompasses broader human and organizational metamorphoses steered by technology (Kane, 2019). Given the rapid technological advancements and burgeoning discourse on the intersection of technology with management, it is pivotal to chart the academic evolution of this field and discern its future trajectory (Nambisan et al., 2017).

The profound impact of digital technologies on organizations and their workforce has garnered significant attention from both academia and industry. As organizations navigate the complexities of DT, there is a pressing need to understand the multifaceted interplay between technology and employee dynamics. This understanding is crucial for organizations to effectively leverage digital technologies while fostering a productive and engaged workforce. However, the existing literature on this topic is fragmented, and a comprehensive synthesis is lacking.

This study meticulously examined seminal papers indexed on the Web of Science (WoS), focusing on the evolutionary trajectory of technology-related research. This study was initiated in 1983 and marked the onset of significant technology-related studies in the WoS database. We purposefully chose this starting point to trace the evolution of technological research over four decades, culminating in 2022. This timeframe enabled a comprehensive understanding of the field's progression and its contemporary relevance. Our approach involved a detailed text-mining analysis of titles, abstracts, and keywords from a carefully selected subset of 21 journals in the management and information technology (IT) disciplines. These journals, which are part of the highly cited *Financial Times* 50 journals, were selected because of their global recognition and significant impact on the scholarly community. Furthermore, these 21 journals have been at the forefront of publishing research on the intersection of technology, management, and strategy, collectively accounting for a substantial portion of the relevant literature in this domain. This concentration of relevant literature in these high-impact journals highlights their influential role in shaping the discourse and advancing knowledge in this field. The selection process led to the identification of 7,000 technology-related articles published from 1983 to 2022. Text-mining analysis has been instrumental in revealing how technology studies have evolved over time, particularly in relation to employee and workplace technology interaction.

After a thorough review of the patterns and progression of technological studies, this study focuses on the trajectories and patterns of research examining the interplay between technology and employees over the past four decades. In addition to text-mining analysis of technology-related studies, 1,046 articles were identified under technology and employee keywords. We reviewed them based on the abstract and title and selected 18 articles for systematic literature reviews.

Thus, our study provides a valuable reference point for scholars by answering the research question, "How has the evolution of technology research, particularly in relation to employee and workplace dynamics, transformed over the past four decades, and what implications does this transformation hold for understanding and anticipating the future intersection of technology and management in the workplace?" This historical lens helps contextualize present-day studies within a broader academic lineage, fostering a richer understanding of how past research has laid the groundwork for contemporary inquiries.

Furthermore, the shift from merely focusing on technology management to exploring the intersection of organizational behavior, team dynamics, and organizational success underscores the maturation of the discipline. The cross-pollination of ideas across traditionally distinct domains such as computer science, psychology, sociology, and business ethics offers an interdisciplinary lens that enriches the theoretical depth and breadth of management research. For instance, integrating computer science

with organizational behavior has led to novel insights into how technology influences workplace behavior, whereas the combination of sociology and business ethics offers a new understanding of ethical issues in technology-driven workplaces. Additionally, through a meticulous, systematic review, we emphasize the multifaceted impact of technological advancements on individual employees, offering insights ranging from tangible effects on job roles to more nuanced psychological and emotional ramifications. Finally, our findings accentuate the redefined essence of work in the contemporary digital age, underscoring the imperative to delve deeper into qualitative shifts in employment perceptions and roles in a world increasingly intertwined with AI and advanced technologies.

2. EVOLUTION OF TECHNOLOGY-RELATED STUDIES

Academic research themes continuously evolve with societal and chronological shifts (Lee et al., 2024). Recognizing these transformations is instrumental in forecasting academic trajectories and unearthing novel research topics (Morillo et al., 2003). Our study explored the metamorphosis of academic themes over time by leveraging topic modeling (Blei et al., 2003) on the abstracts of scholarly statistics sourced from international journals between 1983 and 2022. This analysis will unearth myriad insights into past and current academic development trajectories, facilitating the discernment of academic trends, excavation of emergent research themes, comprehension of contemporary research dynamics, and probing of interdisciplinary potential (Börner et al., 2003).

In our contemporary information-centric society, an immense amount of data is generated, underlining the importance of effectively analyzing and harnessing this deluge (Hilbert & López, 2011). By applying topic modeling to academic studies, this study aims to mine embedded values and insights from previous studies related to technology (Blei & Lafferty, 2009). Consequently, the primary aim of this study was to meticulously trace and analyze the evolution of scholarly focus within the realms of technology and management. By examining topic trends across four distinct time periods (1983-1992, 1983-2000, 1983-2010, and 1983-2022), we sought to understand how academic research has progressively responded to and influenced real-world technological and organizational development. This analysis not only highlights the dynamic shifts in academic priorities, but also aims to identify emerging patterns that offer practical insights for contemporary and future applications in technology management. Our findings provide invaluable insights for future studies and researchers from diverse disciplines during their research journeys (Chen, 2006).

2.1. Method

2.1.1. Text-Mining Approach

Academic discourse continues to embrace and integrate technological advances to refine its methodology. One such method, text mining, facilitates the extraction of meaningful insights from extensive unstructured text data through techniques that span natural language processing (NLP), information retrieval, and machine learning (Feldman & Sanger, 2007). This method is crucial for identifying prominent patterns and gaining insights into document corpora. As a specialized realm within text mining, topic modeling, an unsupervised learning technique, is used to identify subjects within a collection of documents (Blei et al., 2003). Unsupervised learning refers to the process in which an algorithm learns patterns from untagged data without any explicit instruction on what patterns to find, making it well-suited for discovering hidden thematic structures in large textual datasets (Hoffman et al., 2010). This methodology has recently garnered significant attention, and has been applied in various academic disciplines.

Widespread recognition of the potential of topic modeling is evident in existing studies, which highlights the complexities of individual research topics within business studies and illuminates interdisciplinary research possibilities. Previous findings significantly underpin our extensive topic modeling approach in previous studies on technology. Moreover, Lee and Bozeman (2005) emphasized the need to understand international research trends in academic journals. Their approach motivated us to survey academic transformations from a global perspective, using the WoS International Academic Database. Although Börner et al. (2003) aimed to offer the academic directionalities required in actual fields, our study pivots more towards directly utilizing topic modeling rather than visualization.

Building on these foundational studies, our study aims to systematically explore changes in academic topics over time through extensive topic modeling of academic databases. These endeavors are expected to shed light on the trajectories of academic development in the past and present, further aiding the forecasting of future research subjects and directions. With the massive amounts of data

generated in our digital era, as emphasized by Hilbert and López (2011), effectively analyzing and utilizing these data has become paramount. From this standpoint, our study analyzed more than 7,000 academic studies recorded in 21 *Financial Times* 50 listed journals via topic modeling to excavate their inherent value and insights. Our research relies on insights and knowledge gained from previous studies and anticipates that the outcomes will provide valuable material to researchers across various fields (Chen, 2006). By evolving and building on the results of prior studies, our research offers robust methodologies and approaches for visualizing academic subject transformations over time and illustrates how they can be harnessed to predict future research trends.

2.1.2. Data and Preprocessing

Data were collected from the WoS database based on 21 journals, including the *Academy of Management Journal* (*AMJ*), *Administrative Science Quarterly* (*ASQ*), *Human Relations* (*HR*), *Human Resource Management* (*HRM*), *Information Systems Research* (*ISR*), *Journal of Applied Psychology* (*JAP*), *Journal of Business Ethics* (*JBE*), *Journal of Business Venturing* (*JBV*), *Journal of International Business Studies* (*JIBS*), *Journal of Management* (*JOM*), *Journal of Management Information Systems* (*JMIS*), *Journal of Management Studies* (*JMS*), *Management Science* (*MS*), *MIS Quarterly* (*MISQ*), *Organization Science* (*OS*), *Organization Studies, Organizational Behavior and Human Decision Processes* (*OBHDP*), *Research Policy* (*RP*), *Sloan Management Review* (*SMR*), *Strategic Entrepreneurship Journal* (*SEJ*), and *Strategic Management Science* (*SMJ*), and amassed 7,000 scholarly articles from 1983 to 2022. These articles were sourced from various academic journals, including 1,655 from *Research Policy* and 734 from *MIS Quarterly*. The selection of these 21 journals, which predominantly focused on management, strategy, and technology, was deliberate. This choice aligns with our research objective of examining the evolution of technology-related studies and their impact on organizational employees. By focusing on journals that closely interlink technology with management and strategy, we ensured that our review comprehensively covered the multifaceted ways in which technology intersects with organizational dynamics and strategic decision-making. This approach facilitates an inclusive glimpse into diverse academic development trends by ensuring a comprehensive scope within the stipulated timeframe.

Topic modeling, a statistical model employed to discern topics within a collection of documents, has been used to analyze the evolution of academic subjects (Blei et al., 2003). Given its recent surge in popularity across various academic disciplines, this is a powerful, unsupervised learning technique. To implement the Latent Dirichlet Allocation (LDA) model, an integral tool for this research, we utilized the Python library *tomotopy*. The LDA operates on the premise that each document comprises multiple topics, and learns to associate distinctive word distributions with each topic (Blei et al., 2003). The model underwent 200 iterations, with the log-likelihood values produced at each stage to provide real-time insights into the model's performance enhancement. The top 10 words from multiple topics were extracted to discern the essence of each topic.

The preprocessing phase is crucial for data refinement. Using the natural language toolkit (nltk) package, a comprehensive suite of libraries and programs for symbolic and statistical NLP in the English language, we retained English stems and excised extraneous elements such as special characters. The nltk is widely used in text mining for tasks such as tokenization, stemming, and tagging, making it an appropriate choice for ensuring the accuracy and consistency of linguistic analysis. Additionally, English stop words were excluded to ensure a focus on core semantic content (Bird et al., 2009). To achieve a granular analysis of data from 1983 to 2022, the research duration was segmented into four distinct intervals: 1983-1992 (Time period 1), 1983-2000 (Time period 2), 1983-2010 (Time period 3), and 1983-2022 (Time period 4) to see how studies have evolved. The use of overlapping periods was integral to our approach, allowing us to observe the cumulative and evolving nature of this research. By separately examining periods such as 1983-1992 and 1993-2002, we identified distinct trends within each decade. However, overlapping periods are necessary to fully understand the evolution and additive impact of research over time. For instance, examining 1983-1992 and then extending this to include 1993-2000 reveals not only the continuation of trends from the first period, but also the emergence of new ones, providing a clearer picture of the study's evolutionary trajectory. By doing so, we can trace evolutionary paths and key topics by investigating trends with overlapping periods. Topic modeling was executed for each segment, enabling a structured understanding of the evolution of academic subjects over time. After the model training, the primary themes were interpreted using the top words associated with each topic. These interpretations are underscored as one of the principal outcomes of this study.

2.1.3. Exploratory Data Analysis and Optimization

Embarking on the preprocessed data, this study applied an LDA topic-modeling algorithm. Determining the most appropriate number of topics is crucial for modelling precision and efficiency. The coherence and perplexity metrics map the evolution of academic research topics over time. A grid-search method was used to identify the optimal parameter values during the model learning phase. This grid encompasses Alpha and Eta values, considering cases such as [0.01, 0.05, 0.1, 0.2, 0.3] and topic number k as [5, 8, 10, 12, 15, 20, 25, 30]. After training the LDA model for each combination, coherence and perplexity values were computed, leading to the selection of the best parameter combination (Röder et al., 2015). Coherence, which exemplifies the congruence of words within a topic, indicates optimal performance with higher values. By contrast, perplexity shows the model's capability to predict new data; lower values indicate more desirable outcomes (Newman et al., 2010). The decision to use 10–20–20–30 topics across the four phases was based on the results of the grid search (Table 1). We aimed to balance the granularity of topics with the overall coherence of the models. As the volume and complexity of the data increased over time, progressively larger topic numbers (from 10 in the earliest phase to 30 in the latest) offered the best balance between detailed topic representation and model coherence.

In the LDA learning phase of our study, we used an optimal combination of parameters to ensure the high reliability of topic modeling. This approach allowed us to focus on the evolution of research subjects as reflected in the incremental increase in the number of topics discerned from the optimization process. This increase from 10 to 30 topics across the four periods (1983-1992, 1983-2000, 1983-2010, and 1983-2022) mirrors fluctuations in technological and sociocultural trends. In evaluating these topic trends, we deliberately chose not to consider topic frequencies. This decision was made to avoid potential biases arising from the disproportionate representation of certain topics in the larger datasets. Hence, our focus was on the diversity and evolution of topics rather than their frequency. Regarding the data presented in Table 1, a direct comparison of different time periods with varying data point sizes (24, 1,177, 3,495, and 7,000) presents a unique challenge. The stark contrast in data-point volumes across these periods necessitates a nuanced approach to analyzing and interpreting the evolution of topics. This is particularly evident when juxtaposing the initial period (1983-1992) with subsequent periods, as the expansion in data points reflects not only the growth of the field, but also the broadening scope of the topics explored.

One of the pivotal observations of this study was the rapid proliferation of academic papers over time, as depicted in Fig. 1. This surge in data led to the decision to extract 10, 20, 20, and 30 topics across the delineated time intervals, respectively. This approach ensures that the primary topics of each period do not merely represent the themes emerging during that epoch, but more crucially, reflect the relative frequency of their coverage in academic discussions. By adopting this strategy, this study transcends the mere chronological mapping of topic evolution and successfully captures fluctuating academic interests across different timeframes.

2.1.4. Results and Interpretation of Topic Evolution over Time

Diving into topic modeling outcomes for each period yields the following insights (Table 2):

Time period 1 (1983-1992): During this nascent phase of technological advancement, the primary emphasis was on "Information Technology Management and Problem-solving." This highlights the initial stages of computer technology and the emergence of the Internet, in which research was chiefly centered on optimizing IT resource management and devising innovative problem-solving methodologies using these technological instruments.

Time period 2 (1983-2000): This interval heralded

Table 1. Results of parameters and hyper-parameter for optimization

Time period	Alpha	Eta	k	Best coherence	Perplexity
1983-1992	0.01	0.1	10	0.575	142.249
1983-2000	0.3	0.05	20	0.488	1,578.080
1983-2010	0.2	0.3	20	0.537	2,028.227
1983-2022	0.1	0.3	30	0.549	2,344.293

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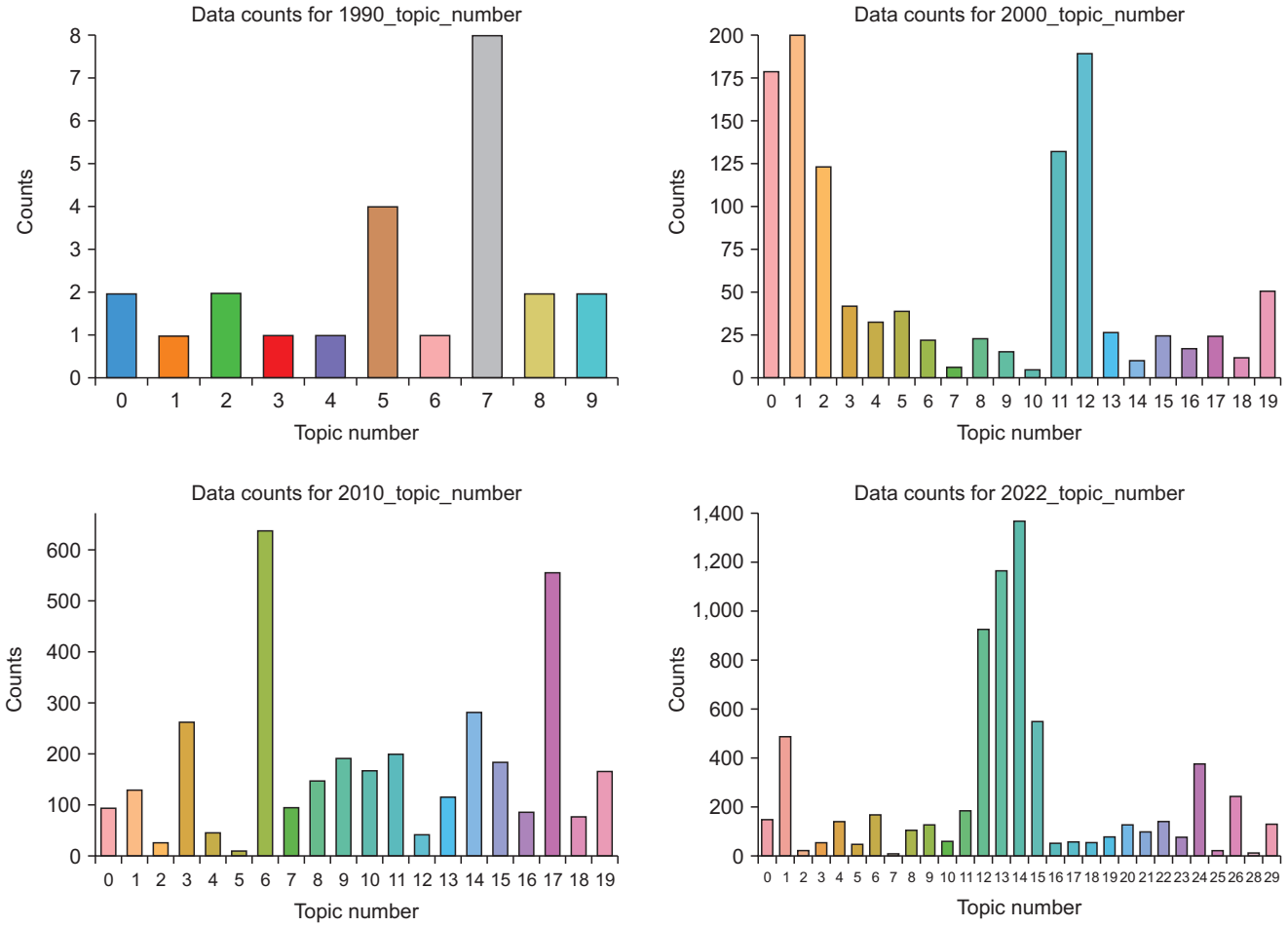

Fig. 1. Number of publications over time.

a more diverse scholarly landscape, encompassing subjects such as "Research Methodology and Performance Measurement Analysis," "Technological Development and Organizational Information Systems," and "Technology Innovation and Industry Adoption Dynamics." This period reflected academia's proactive response to swift technological advancements, emphasizing the intersection of technological development and organizational management methodologies.

Time period 3 (1983-2010): During this period, salient themes emerged, such as technological innovation, industrial policy and research models, and information system management. Simultaneously, the emergence of themes such as "Team Management and Project Development Performance" and "Organizational Change and Social Theory in Technology" emphasized the growing confluence of organizational behavior and technological breakthroughs. Such themes underscored the increasing significance of technological policies, management of information systems, and the nuanced dance between organizational metamorphoses and technological progress.

Time period 4 (1983-2022): The most recent scholarly trends gravitate towards "Firm Performance and Investment Value," "Technology Policy and Innovative Science," and "Research Models and Technology Development." Concurrently, subjects such as "Product Pricing and Market Dynamics in Technology" and "Organizational Learning and Knowledge Management" have garnered significant academic attention. This indicates a sophisticated evolution in research priorities from preliminary technological management considerations, to a holistic evaluation of organizational performance in the face of technological advancements and their strategic implications.

In summary, topic modeling elucidates the discernible

Table 2. Keywords and labelled topic name from time period 1 to 4

Time period	Topic number and labelled topic name
Time period 1 (1983-1992)	Topic #0: Group Behavior Analysis & Organizational Functionality Topic #1: Software Development & Quality Assurance in Business Topic #2: Planning & Environmental Impact on Product Design Topic #3: Cellular Layout & Operational Performance Topic #4: Application Development & Project Management Topic #5: System Adoption & Research in Implementation Strategy Topic #6: Organizational Theory & Technology Diffusion Roles Topic #7: Information Technology Management & Problem Solving Topic #8: Professional Threats & Opportunity Identification Topic #9: Group Decision Support & Time-Based Experience Comparison
Time period 2 (1983-2000)	Topic #0: Technology Innovation & Industry Adoption Dynamics Topic #1: Research Methodology & Performance Measurement Analysis Topic #2: Product Development & Strategic Manufacturing Topic #3: Competitive Market Strategy & Venture Success Topic #4: Small Firm Growth & Entrepreneurial Strategies Topic #5: Group Dynamics & Decision Support in Teams Topic #6: Communication Theory & Social Media Utilization Topic #7: Venture Investment & Value in Capital Funding Topic #8: Performance Improvement & Time Efficiency Topic #9: Network Alliances & Collaborative Partnerships Topic #10: Corporate Internationalization & Global Activity Topic #11: Science Policy & Industrial Technology Research Topic #12: Technological Development & Organizational Information Systems Topic #13: Project Management & Problem Solving Models Topic #14: Investment Value & Market-Based Customer Services Topic #15: Knowledge Transfer & Organizational Learning Capability Topic #16: Business Management & Executive Strategic Planning Topic #17: Organizational Design & Structural Theory Topic #18: Patent Evaluation & University Technology Applications Topic #19: Information Systems & Decision Support Technologies
Time period 3 (1983-2010)	Topic #0: Ethics in Business Technology & Professional Responsibility Topic #1: Firm Performance & Entrepreneurial Venture Strategies Topic #2: Contract Management & Outsourcing Risks in Investments Topic #3: Team Management & Project Development Performance Topic #4: Professional Training & Employee Skill Development Topic #5: Service Quality & Employee-Customer Satisfaction Topic #6: Technology Innovation & Industrial Policy Topic #7: Firm Competitive Advantage & Resource Integration Topic #8: Company Strategy & Technology Management Topic #9: Product Marketing & Consumer-Centric Pricing Topic #10: Patent Research & University Intellectual Property Topic #11: User Behavior & Technology Adoption Influences Topic #12: Information Network Systems & Privacy in Technology Adoption Topic #13: Knowledge Transfer & Organizational Learning in Innovation Topic #14: Organizational Change & Social Theory in Technology Topic #15: Investment Value & Performance Measurement in Technology Topic #16: Group Dynamics & Communication in Decision Support Topic #17: Research Models & Information System Management Topic #18: Internationalization & Foreign Investment in Technology Firms Topic #19: Firm Alliances & Industrial Network Strategies

evolution in research emphases across various epochs. From foundational themes centered on IT management at the dawn of the technological age to the intricate considerations of technological policies, organizational performance metrics, and investment implications in contemporary times, this evolution underscores academia's dynamic response to the symbiotic relationship between technology and management. Such shifts reiterate the critical role of advanced analytical methods, such as topic modeling, in shaping the trajectory of scholarly endeavors, ensur-

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Table 2. Continued

Time period	Topic number and labelled topic name
Time period 4 (1983-2020)	Topic #0: Consumer Online Behavior & Service Experience Topic #1: Product Pricing & Market Dynamics in Technology Topic #2: Employee & Human Capital Development Topic #3: Supplier Management & Outsourcing Relationships Topic #4: Competitive Advantage & Sustainable Business Strategy Topic #5: Digital Platforms & Internet Service Development Topic #6: Decision-Making & Information Control Systems Topic #7: Software Efficiency & Cloud Computing Optimization Topic #8: Academic Research & University-Industry Collaboration Topic #9: Project Management & Software Implementation Quality Topic #10: Strategic Alliances & Partnership Management Topic #11: Patent Analysis & Intellectual Property Licensing Topic #12: Firm Performance & Investment Value Topic #13: Technology Policy & Innovative Science Topic #14: Research Models & Technology Development Topic #15: Technology Adoption & Industrial Market Dynamics Topic #16: Group Communication & Electronic Support Systems Topic #17: Employee Training & Professional Ethics in the Workplace Topic #18: Entrepreneurial Ventures & Start-up Investments Topic #19: Social Network Analysis & Peer Influence Topic #20: Institutional & Ethical Practices in Organizational Change Topic #21: Team Performance & Virtual Work Relationships Topic #22: User Behavior & Trust in Information Systems Topic #23: Internationalization & Global Firm Knowledge Topic #24: Organizational Learning & Knowledge Management Topic #25: Healthcare Systems & Patient Data Management Topic #26: Firm Innovation Performance & Resource Management Topic #27: Fraud Detection & Risk Management in Auctions Topic #28: Cybersecurity & AI-Driven Risk Management Topic #29: Company Strategy & Business Technology Adaptation

ing that they remain agile and pertinent in a perpetually evolving technological and managerial milieu.

Academic research's beauty lies in its ability to trace the ebb and flow of intellectual curiosity over time. Examining the evolution of specific topics in our study makes it evident that the scholarly focus has shifted and transformed, echoing larger societal and technological changes. As an illustration, Topic 7 from Table 2 (1983 to 1992) was dominantly classified as "Information Technology Management and Problem Solving," emblematic of a nascent period when IT and problem-solving management were of prime interest. However, this topic morphed into broader and more sophisticated arenas as decades passed. By 2000, it transmuted to Topic 12, emphasizing "Technological Development and Organizational Information Systems," and by 2010, it had evolved yet again to Topic 3, shedding light on "Team Management and Project Development Performance." This dynamic shift from a focus on technology management to the nuanced aspects of team dynamics and project success within organizations signals a maturation in academic pursuits, culminating in 2022 with Topic 6, "Decision-Making and Information Control Systems."

Such mutable narratives of a single topic encapsulate how academic interests are not static but reflective of broader societal, technological, and organizational shifts. This is further illustrated by the Sankey Diagram (a powerful visualization tool widely used across sectors such as marketing and energy analysis), as shown in Table 2. While the volume of data for the period up to 1992 was deemed insufficient for comparison, the visualization from 1983 to 2000 elucidates the flux in popular topics over time, offering a holistic overview of interconnected academic trajectories.

Fig. 2 provides a panoramic view of the flow of popular topics through 2000, 2010, and 2022. It meticulously traces the progression from micro-level insights such as "Product Development and Strategic Manufacturing" to macroscopic evaluations focusing on "Investment Value and Performance Measurement in Technology" and, eventually, "Firm Performance and Investment Value." This trajectory mirrors a broader shift in research emphasis from

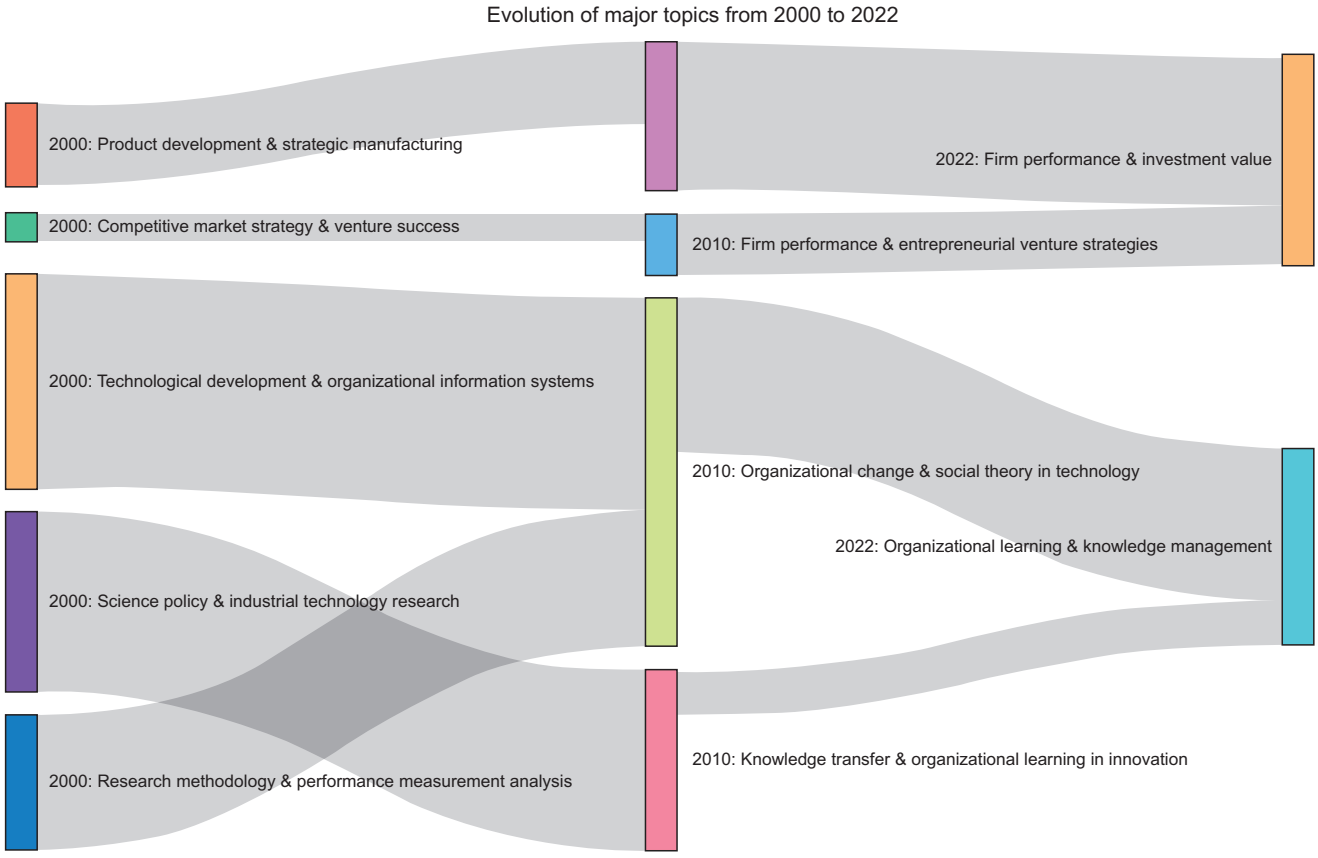

Fig. 2. Evolution of important topics over time.

an initial focus on tangible product development and operational efficiency to a broader, long-term perspective on organizations' overall value and performance in the technological landscape.

Moreover, the transformation from "Technological Development and Organizational Information Systems" to themes such as "Organizational Change and Social Theory in Technology" and "Organizational Learning and Knowledge Management" underscores a nuanced evolution. Organizations have transcended merely altering their internal processes and information systems to strategically position themselves within larger societal narratives. The elevated emphasis on continuous learning and knowledge management foregrounds the importance of technological advancements and accentuates the intricate interplay between intra-organizational dynamics and external technological changes. This intricate interplay highlights the importance of management research for technology-related studies. Understanding its ramifications for organizational structures, processes, and strategies becomes paramount as technology continues its inexorable march forward. Thus, management research bridges technological advancements with organizational realities, ensuring that innovations are harnessed effectively, ethically, and strategically.

In the nexus between interpretation and introduction of new technologies, the increasing centrality of technology's role in shaping workplace dynamics becomes evident. The interpretive journey from initial technological product development to its current profound influence on organizational value and performance emphasizes the intrinsic relationship between technological advancement and management. Organizations have evolved from viewing technology as a tool for operational optimization to recognizing its fundamental role in shaping organizational structures, processes, and long-term strategies. Such an evolution parallels scholarly recognition that the successful adoption of new technologies hinges significantly on employees' willingness and capability to integrate these technologies into their work roles and practices (Blanka et al., 2022; Eller et al., 2020). The introduction and adaptation of new technologies in the workplace are not solely a

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function of the technologies but are interwoven with the broader organizational fabric. As technology becomes an institutional infrastructure component, its effects resonate beyond mere operational facets, shaping the sociotechnical contexts in which employees operate (Barley & Kunda, 2001; Orlikowski & Barley, 2001). This evolving symbiotic relationship underscores the imperative for management scholars to delve deeper into the nuanced interplay between technology and its human and organizational implications. Ensuring that the benefits of technology are harnessed while mitigating potential disruptions requires a holistic understanding of both technological tools and the organizational and individual contexts in which they are situated.

3. EVOLUTION OF MANAGEMENT AND TECHNOLOGY STUDIES

The transformation of scholarly focus from early IT management to the broad implications of technology in organizational contexts, as delineated in our topic analysis, sets the stage for a deeper dive into the evolution of management- and technology-related studies. This progression underscores the necessity of examining the role of technology within organizational structures and employee dynamics, a focus explored in detail in the following section. As we transition to discussing the evolution of management- and technology-related studies, it becomes imperative to understand how these shifts in academic focus, from the tactical use of technology to its strategic implications, have influenced the development of organizational theory and practice. The forthcoming section further elaborates on this by providing empirical insights and theoretical frameworks that reflect the intricate relationship between technology, organizational structures, and employee behaviors.

3.1. Foundations of Technology on Work

The adaptation of technology can cause a change in the patterns of social organization and organizational structure by considering how the context causes the change (Barley, 1986; 1990; Rousseau, 1979), and technology is part of the institutional infrastructure in the organization (Orlikowski & Barley, 2001). Rousseau (1977) emphasized context and organization as interconnected components, including a social structure to relate employees to technology and technology to transform raw materials into output. Therefore, incorporating IT into the organizational context is necessary to understand employees and corporations (Barley & Kunda, 2001).

New IT has represented an opportunity for competitiveness and innovation and a new organizational attitude and behavior perspective, leading to positive and negative consequences (Zuboff, 1988). For example, Brynjolfsson (1993) explains the productivity paradox of technology adaptation and finds no strong relationship between IT and performance. Additionally, a meta-analysis of the adaptation of telecommuting technology found no detrimental effects on workplace-related outcomes (Gajendran & Harrison, 2007). Likewise, we have seen mixed results of technology on organizations and employees and have understood the role of context in adopting technology in the organization. Therefore, it is critical to consider the impact of technology in the socio-techno context (Barley, 1986; 1990).

To understand how organizational attitudes and behaviors are affected by context, we must assume that employees are the agencies affected by the structure (i.e., rules and resources) and can affect the structure simultaneously (Whittington, 2015). Based on the theory of structuration (Giddens, 1984), the duality of the technology concept was developed to explain technology as enacted by human agency and institutionalized in structure (Yates & Orlikowski, 1992). In this context, changes related to technology adaptation can be explained either by the technology applied by the employee (Grint & Woolgar, 2013) or by the context in which employees are involved (Barley & Kunda, 2001). The study of change has received considerable attention from practitioners and scholars because employees and organizations struggle to adapt to changing environments. Cognitive and affective aspects are antecedents that explain how individuals and organizations are ready for change (Rafferty et al., 2013). Furthermore, when employees experience organizational changes, including technological advances and strategic transformation, these changes impact their affective and cognitive attitudes (Fedor et al., 2006).

3.2. New Technologies in the Workplace

Organizational scholars have long recognized the importance of technology adoption in organizations (e.g., Aldrich, 1972; Blau et al., 1976; Rousseau, 1977; Thompson & Bates, 1957). They proposed that adopting new technologies could affect organizational structure, decision-making processes, performance, and survival (Giddens, 1984; Rousseau, 1977; Sutton & Rousseau, 1979).

One consistently recognized notion in this tradition is that employees play a crucial role in adopting and uti-

lizing new technologies (Blanka et al., 2022; Eller et al., 2020; Verhoef et al., 2021). Even when a technology is formally adopted by top management, were it not for the employees' willingness and capability to learn and leverage the focal technology at work, the focal technology may not practically contribute to organizational effectiveness (Xiong, 2022).

3.3. Systematic Literature Review

To identify the effects of new and advanced technology usage, we conducted empirical studies that focused on the relationship between new and advanced technology usage and employee and organizational outcomes. Based on a systematic search of published research in 21 journals from the *Financial Times* 50 list, out of 7,000 articles we identified 1,046 empirical studies. We reviewed them to examine the relationship between technology usage and employee outcomes. We excluded unpublished studies (e.g., working papers and dissertations) and studies published in non-English languages. We selected and reviewed the 17 most relevant articles, generating interesting findings for the targeted relationships. The studies included in this review are summarized in Table 3 (Ayyagari et al., 2011; Bala & Venkatesh, 2016; Becker et al., 2021; Benlian, 2020; Boswell & Olson-Buchanan, 2007; Butts et al., 2015; Chapman et al., 2005; Derks et al., 2016; Gajendran & Harrison, 2007; Golden & Fromen, 2011; Long, 1993; Morris & Venkatesh, 2010; Pirkkalainen et al., 2017; Tong et al., 2021; van Zoonen et al., 2021; Venkatesh et al., 2016; Wu & Kane, 2021).

First, when Orlikowski and Scott (2008) analyzed 2,027 articles from leading journals, only 100 were directly related to the role and influence of technology in organizations. Likewise, our analysis found that 1,046 (2.3%) are directly associated with the role and influence of technology out of 7,000 articles. Second, as shown in Table 3 (Ayyagari et al., 2011; Bala & Venkatesh, 2016; Becker et al., 2021; Benlian, 2020; Boswell & Olson-Buchanan, 2007; Butts et al., 2015; Chapman et al., 2005; Derks et al., 2016; Gajendran & Harrison, 2007; Golden & Fromen, 2011; Long, 1993; Morris & Venkatesh, 2010; Pirkkalainen et al., 2017; Tong et al., 2021; van Zoonen et al., 2021; Venkatesh et al., 2016; Wu & Kane, 2021), there are mixed results regarding the use of technology on employee outcomes, including attitudes, emotions, productivity, and performance. However, there is a negative impact on individual-level variables, including turnover intention, anxiety, and health.

The Table 3 provides an insightful exploration of the empirical relationship between implementing new and advanced technological tools and their associated outcomes, particularly regarding their impact on employees. In particular, the earliest study by Long (1993) delved into the effects of introducing new IT on job quality, noting a significant gendered disparity in its impact. This lays the groundwork for understanding how technology can affect diverse employee groups. Fast forwarding to more recent studies, such as Pirkkalainen et al. (2017), Benlian (2020), and Becker et al. (2021), reveals a recurrent theme of "technostress." These studies collectively underscore the emerging challenges that modern employees face owing to the ubiquity of technology, emphasizing the need for proactive and reactive coping mechanisms to mitigate the adverse effects of technology-induced stress. These findings serve as poignant reminders of the dual-edged nature of technological integration in the workplace.

Studies such as those by Chapman et al. (2005) and Golden and Fromen (2011) highlight the shifting paradigms in job interviews and managerial dynamics in a digital era. They emphasized the perceptual and experiential differences between technology-mediated interactions and traditional face-to-face encounters. Furthermore, Morris and Venkatesh (2010), Bala and Venkatesh (2016), and Tong et al. (2021) focus on the strategic adoption of technology in organizations, with a keen focus on its effects regarding job satisfaction, operational efficiency, and performance feedback. These studies emphasize the value of understanding the broader organizational implications of technological implementation, specifically, the need for organizations to remain adaptive and cognizant of the evolving technological landscape.

Lastly, Boswell and Olson-Buchanan (2007), Derks et al. (2016), and van Zoonen et al. (2021) delve into the realm of telecommunication, emphasizing its role in shaping work-life dynamics. These studies underscore the increasing convergence of professional and personal domains brought about by the proliferation of digital communication tools. The implications for work-life balance, role conflict, and the boundaries between professional and personal spheres are salient in these discussions.

4. FUTURE RESEARCH DIRECTIONS

As we stand on the frontier of a new era of organizational dynamics and technological integration (Gao & Jin, 2023; Ling, 2023), it is imperative to anticipate and understand the evolving landscape of the workplace. The rapid proliferation of advanced digital technologies,

Table 3. A summation of the empirical evidences for the relationship between new and advanced technology usage and outcomes

Study	Outlet	Method	Independent variable	Dependent variable	Contingency	Findings
Long (1993)	HR	Quantitative+ interview	Use of new information technology (IT)	- Job quality of white-collar workers (+) - Woman larger impact than man	- Gender (woman and man) - Occupational group (secretarial, technical, and managerial employees) - Industrial sector (primary, manufacturing, and services)	Comparison between woman and man as well as among types of workers (cross-sectional data)
Chapman et al. (2005)	JAP	Quantitative (signal theory)	Video conferencing interview	- Perception of fairness (-) - Higher job acceptance intentions (-)	- Number of offers an applicant received	Technology-mediated interview has less favorable reaction than face-to-face one to applicants (data collected in a field sample)
Gajendran & Harrison (2007)	JAP	Meta-analysis	Telecommuting using electronic media	- Perceived autonomy (+) - Job satisfaction (+) - Job performance (+) - Role stress (-) - Work-family conflict (-)	- Telecommuting intensity	Reviewing 46 studies with 12,883 employees resulting in positive view of telecommuting (causal relationship tentative)
Boswell & Olson-Buchanan (2007)	JOM	Quantitative	Using telecommunication technology after working hours	- Work-to-life conflict (+) - Ambition (+) - Job involvement (+)		There are positive and negative outcomes using telecommunicating technology (effects across an organization rather than a specific job group and cross-sectional data)
Morris & Venkatesh (2010)	MISQ	Quantitative (job characteristics model)	Job characteristics (task significance, identity, skill variety, autonomy, and feedback)	- Job satisfaction	- Buffering impact of use of enterprise resource planning (ERP) systems on skill variety, autonomy, and feedback on job satisfaction	Adding of new knowledge to existing findings through use of ERP systems and proving implementation of ERP (sample from single organization)
Golden & Fromen (2011)	HR	Quantitative (social exchange theory)	- Telework - Virtual work	- Work experience (feedback, empowerment, development, and workload) (less positive than traditional work) - Subordinate's job satisfaction (-) - Higher turnover intentions (+)	- Subordinate work modes (traditional and virtual)	Suggesting the importance of manager's work mode (cross-sectional and self-report data)

Table 3. Continued

Study	Outlet	Method	Independent variable	Dependent variable	Contingency	Findings
Ayyagari et al. (2011)	MISQ	Quantitative (person-environment fit)	- Perception of technology presenteeism - Perception of technology anonymity	- Work-home conflict (+) - Invasion of privacy (+) - Work overload (+) - Role ambiguity (+)	- Stressors (work-home conflict, invasion of privacy, work overload, and role ambiguity) as a predictor of strain	Extension of past stress research: predictors of strain due to ICTs and determinants of technostress
Butts et al. (2015)	AMJ	Quantitative (affective events theory)	- Electronic communication (negative) affective tone (ECAT) - Time required for electronic communication (TREC)	- Anger (+with ECAT) - Happiness (-with ECAT) - With-in person anger (+with TREC) - Work-to-nonwork conflict (+TREC)	- Abusive supervision - Communication sender - Segmentation preference	Finding the mechanism between affective process to work-to-nonwork conflict (sampling method and measurement of within-person item)
Derks et al. (2016)	HR	Quantitative (boundary theory)	Smartphone use after hours	- Work-family conflict (-) - Family role performance (+)	- General segmentation preference (integrators or segmenters)	Different results of smartphone use on work-family-conflict (self-report measures)
Venkatesh et al. (2016)	ISR	Quantitative+ interview	Implementation of information and communication technologies (ICT)	- Operational efficiency (-) - Job satisfaction (-) - Customer satisfaction (-)	- Pre and post implementation	Conducting multimethod longitudinal study and finding traditional barriers to ICT implementation (single sample in an India)
Bala & Venkatesh (2016)	MS	Quantitative (coordination theory)	Collaboration technology use	- IT-enabled collaboration capability (+) - Collaboration satisfaction (+)	- Process orientations (exploration, exploitation, ambidexterity)	Process orientation (ambidexterity) strengthens the relation between collaboration tech use and IT-enabled collaboration capability and satisfaction (cross-sectional data and operationalization of moderator through functional affiliations)
Pirkkalainen et al. (2017)	JMIS	Quantitative (technostress)	Technostress creators	- IT-enabled productivity (-)	- Proactive coping (positive reinterpretation and IT control) - Reactive coping (distress venting and distancing from IT)	Theorizing and validating proactive and reactive coping behavior related to technostress (self-report data and specific coping behavior)

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Table 3. Continued

Study	Outlet	Method	Independent variable	Dependent variable	Contingency	Findings
Benlian (2020)	MISQ	Quantitative (technostress)	- Technology challenge stressor (TCS) - Technology hinder stressor (THS)	- Partnership satisfaction (+with TCS) - Partnership satisfaction (-with THS)	- Work-home role integration - Perceived organizational support in work-home boundary management	Conceptualization of work stressor framework and emphasizing daily technology-drive work stressors (potential reverse causality and timing of data collection)
Becker et al. (2021)	JOM	Quantitative (resource based view)	Electronic communication	- Level of anxiety (-) - Health (-) - Relationship quality (-)	- E-mail triggered anxiety	Extension of job-related stressors and suggestion of role of e-anxiety (crossover effects of Study 2)
Wu & Kane (2021)	OS	Quantitative	Adopting an expertise search tool	- Employee work performance in billable revenue (+)	- New connections - Information diversity	Finding the mediating effect of network connections and information diversity and larger impact from two type of employees
Tong et al. (2021)	SMJ	Quantitative	Performance feedback using artificial intelligence (AI)	- Deployment effect: job performance (+) - Disclosure effect: job performance (-)	- Negatively moderating the impact with longer tenure	Positive and negative impact from AI feedback coexist and suggesting contingency matters
van Zoonen et al. (2021)	JOB	Quantitative (technology-assisted supplemental work [TASW])	Collaboration technology use	- TASW (+)	- Positively moderating effect of team-level response expectations - Positively moderating effect of persistence of communication	Identifying mechanism drivers of process that contribute to increase in workday span and acknowledge what constitutes afterhours work remains relevant (cross-sectional data)

HR, Human Relations; JAP, Journal of Applied Psychology; JOM, Journal of Management; MISQ, MIS Quarterly; AMJ, Academy of Management Journal; ISR, Information Systems Research; MS, Management Science; JMIS, Journal of Management Information Systems; OS, Organization Science; SMJ, Strategic Management Journal; JOB, Journal of Organizational Behavior.

coupled with changing societal norms and expectations, challenges traditional paradigms and necessitates the re-evaluation of established constructs. The intersections of humans and machines, the meaning and essence of work, and the spatiotemporal dimensions of the workplace have undergone a profound transformation. In this context, we recommend that scholars and practitioners explore three avenues that provide promising directions for future research.

First, the meaning of work in the age of AI and generative technologies must be further investigated. The digitization of the workplace, as reflected in the studies in Table 3 (Ayyagari et al., 2011; Bala & Venkatesh, 2016; Becker et al., 2021; Benlian, 2020; Boswell & Olson-Buchanan, 2007; Butts et al., 2015; Chapman et al., 2005; Derks et al., 2016; Gajendran & Harrison, 2007; Golden & Fromen, 2011; Long, 1993; Morris & Venkatesh, 2010; Pirkkalainen et al., 2017; Tong et al., 2021; van Zoonen et al., 2021; Venkatesh et al., 2016; Wu & Kane, 2021), underscores the evolving dynamics between technology and the workforce. A logical progression of this trend would necessitate researchers to delve deeper into the qualitative facets of employment in the digital age, particularly the "meaning of work." As AI, robots, and generative technologies have become more pervasive, there has been a transformative shift in job roles and responsibilities. While technology might automate repetitive tasks, it simultaneously places a premium on uniquely human attributes such as creativity, empathy, and complex problem-solving. Future research could explore how employees derive personal values, meaning, and growth opportunities in professions that are increasingly intertwined with AI and generative technologies. Building on the foundational studies of Chapman et al. (2005) on perceptual differences in technology-mediated interactions, understanding the psychological and emotional dimensions of work in such an environment is paramount.

Second, owing to technological advances, the concept of the workforce has expanded to include robots and AI. Studies, particularly those by Morris and Venkatesh (2010) and Tong et al. (2021) have highlighted the strategic adoption of technology and its implications for job satisfaction and performance. Building on these insights, future research can explore the collaborative dynamics between human workers and their AI and robotic counterparts. As the distinction between human and "human jobs" and "machine jobs" blurs, understanding the synergies, conflicts, and productivity enhancements that arise from such collaborations becomes essential. How does the presence of AI in decision-making influence job satisfaction? How do employees perceive value and meaning when working with robotic counterparts? These questions, which are rooted in technology and human resource management, are pivotal for future research.

Third, future studies should reconceptualize the workplace in terms of time and space. The emergence of telecommunications and digital technologies, as highlighted by Boswell and Olson-Buchanan (2007) and Derks et al. (2016), has paved the way for a reimagined concept of the "workplace." Future research should focus on understanding the implications of unconventional work policies, such as the 4-days-a-week model, on employee productivity, well-being, and work-life balance. Additionally, as mixed reality (MR) and virtual reality (VR) technologies mature, the potential of mixed-reality workplaces has become an exciting avenue for exploration. What are the dynamics of team collaboration in a VR office setting? How do MR environments influence job roles, training, and onboarding processes? Although futuristic, these research directions are rapidly becoming pertinent to the evolution of the digital workplace.

5. DISCUSSION

5.1. Academic Contributions

This study contributes to existing literature in several ways. First, it offers an evolutionary perspective on scholarship on technology, illuminating how academic inquiry has transformed in alignment with broader societal, technological, and organizational shifts over time. Drawing from Yoo et al. (2012), we exemplify the nuanced transition from the infancy of technological studies, primarily focused on IT management, to contemporary complexities entailing interwoven technological and managerial considerations. By adopting a text-mining approach, we provide a methodological bridge to understanding such evolutionary trajectories, highlighting the dynamism inherent in academic pursuits vis-à-vis technology.

Second, this systematic review underscores the nuanced, multidimensional relationship between technological advancements and their implications for employees and organizations. Early studies such as Long (1993) emphasized the gendered impact of technology on job quality, suggesting the need for future research that considers intersectionality when assessing the impact of technological tools. As the role of technology in organizations has become more pervasive, themes such as technostress have emerged, as evidenced in more recent works such as Pirkkalainen et al. (2019) and Benlian (2020), indicating a

growing area of concern for organizational scholars. This evolution points to a theoretical trajectory wherein initial explorations of technology integration into the workplace have given way to more complex psychological, emotional, and behavioral considerations. Moreover, the shift from focusing purely on technological tools to understanding the broader implications of technological ecosystems suggests a maturing discourse urging scholars to adopt a more holistic, system-oriented perspective on the role of technology in organizational settings.

Third, we emphasize the profound shifts awaiting future work, particularly in understanding the essence of work in the age of ubiquitous digital technologies. Building on foundational works such as Chapman et al. (2005), our study highlights the imminent need to explore the qualitative facets of employment. With the growth of AI, robots, and generative technologies, scholars are increasingly interested in exploring qualitative shifts in how individuals perceive their roles, derive meaning, and navigate professional trajectories in environments intertwined with advanced technologies.

5.2. Practical Contributions

As organizations continue their inexorable march toward DT, leaders and managers must recognize the profound implications of technology for the workforce (Lee et al., 2021). Our findings emphasize that technology integration has diverse impacts, ranging from enhancing operational efficiencies to nuanced challenges such as technostress. Thus, organizations must strategically align their technological adoption with human-centric considerations to ensure that the tools and platforms they deploy enhance productivity and promote employee well-being and satisfaction.

Given a rapidly changing technological landscape, continuous learning and adaptation are vital. Our study underscores the need for organizations to invest in training programs that cater to the evolving demands of the digital age. This is particularly relevant when AI, robotics, and generative technologies are present in a workspace. A well-structured training regimen can help employees navigate these technologies confidently, minimize anxiety, and maximize productivity.

As highlighted in our findings, the emergent challenges of technostress bring the importance of employee mental health and well-being. Organizations must recognize these challenges and proactively introduce measures to combat them. This could range from fostering a culture that promotes regular digital detoxes to introducing counseling and support services that help employees navigate the complexities of a digital-first work environment.

Finally, as AI and robotic entities become integral parts of organizational teams, managers must foster an environment that promotes seamless collaboration between human employees and their digital counterparts. Clear communication, role delineation, and regular feedback loops can optimize the synergy between humans and machines, paving the way for enhanced productivity and innovation.

5.3. Limitations and Future Research Directions

Although this study makes theoretical and practical contributions, it has some limitations. First, although our research concentrated on the evolution and movement of various topics, it is plausible that more intricate shifts and changes went unnoticed. Moreover, with the escalation in data quantity, it became evident that topics were not merely evolving or transitioning, but entirely new subjects have emerged at a higher rate. This potentially indicates a limitation in our study, as the content we could conclusively categorize as "evolved" might be relatively less than the actual data volume. To alleviate this problem, distributing the data uniformly or in approximate values across each segment would yield a clearer depiction of the evolutionary process.

Second, in dividing our research span from 1983 to 2022 into four distinct intervals, we revealed disparities in data quantities across these segments, thereby altering the appropriate number of topics per period. Extracting an equivalent number of topics from each era becomes challenging when the number of documents significantly surges during specific times, necessitating a larger number of topics in those periods. Too much data combined with topics can increase the perplexity, complicating the topic evolution analysis. Conversely, limited data with fewer topics may be inadequate for evolutionary scrutiny. Therefore, assigning consistent topics to each segment, combined with the corresponding parameters and hyperparameters, is crucial.

Our systematic review provides an extensive exploration of the relationship between advanced technology usage and outcomes for employees and organizations. However, it is constrained by its methodological choices. The limitation of focusing solely on English-language articles from highly ranked journals overlooks significant contributions from non-English sources and unpublished works. This language and publication bias may limit the global applicability and scope of our findings, as important insights from other regions and non-mainstream

publications might be omitted. Therefore, while our review is thorough within its defined scope, our conclusions may not encapsulate the full spectrum of the discourse on the impact of new technologies on employees and organizations.

In addressing the limitations highlighted, it is essential to acknowledge that while the research aimed to capture the impacts of technological evolution on organizational members, the study did not thoroughly explore how these changes influence individual information behaviors within the organization. Future research could benefit from a deeper investigation into how employees adapt their information-seeking, sharing, and usage strategies in response to technological advancements. Such an inquiry would not only enhance our understanding of the micro-level effects of technology on individual behaviors, but also align more closely with information science disciplines that examine human interaction with technological systems.

Moreover, another potential limitation of this study is the underrepresentation of the varying intensities of technology integration across different organizational levels and industries. Future studies should consider a more segmented approach, examining specific sectors or departments to provide a more comprehensive analysis of technological impacts. This approach would allow for a better understanding of how different types of technology affect various organizational structures and roles. Additionally, integrating longitudinal methods to observe these effects over time could offer insights into the long-term consequences of technological integration on organizational dynamics and employee behavior, providing a richer context for both theoretical exploration and practical application in managing technological change in the workplace.

To further deepen exploration of how technologies have evolved, integrating principles from information science offers a significant advancement in understanding these dynamics. Information science provides frameworks that can effectively dissect the mechanisms by which technology influences information behaviors and decision-making processes within organizations. Notably, theories such as the cognitive load theory (Sweller, 1988) and the theory of information seeking behavior (Wilson, 1999) can enrich our understanding of how employees adapt to and interact with new technological environments. Applying these theories, we can more thoroughly investigate how the cognitive aspects of technology use impact employee efficiency and stress levels, providing a more comprehensive view of the technological transformation in organizational contexts.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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