

# The Role of Middle Managers in Digital Transformations: A Bibliometric Perspective

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## Abstract

*The research aims to advance a systematic literature review addressing middle managers' relationship with digital transformation. The central research question is: What is the role of middle managers in organizations undergoing digital transformations? This study goes deeper into the role of middle managers in contemporary organizations. Through a comprehensive bibliometric analysis of existing literature, the research underscores that middle managers play a significant and multifaceted role in digital transformations. It reveals the diverse responsibilities of middle managers, who act as catalysts, implementers, and mediators in the adoption of digital technologies. Middle managers are crucial in bridging top management's strategic objectives and operational execution, thereby significantly influencing the success of digital initiatives. Key challenges faced by middle managers include managing change, fostering innovation while maintaining business continuity, and dealing with the human aspects of transformation, particularly resistance to change. The study uses PRISMA 2020 guidelines and identifies dominant themes and gaps in current research, emphasizing the need for a deeper understanding of the contextual and micro-social factors that influence middle managers' effectiveness in digital transformations. This paper contributes to academic knowledge by mapping the evolving role of middle managers in digital landscapes and suggesting directions for future research to enhance their effectiveness in driving organizational change. To the best of the author's knowledge, this research provides a first systematic review of middle managers' roles in digital transformations, showing the current state of research and highlighting valuable insights to better understand the dynamic interplay between middle management and digital transformation.*

## Keywords

Bibliometric Analysis; Digital Transformation; Middle Managers; Leadership; Resistance to Change.

## Introduction

Contemporary organizations are continuously evolving, driven by global competition, efficiency pressures, deregulation, technological advancements, and changes in workforce demographics, including new generations and hybrid work models. Huy (2002) defines these changes as “a form of radical transformation, fundamentally altering organizational rules and structures.” Among the transformative forces, digital transformation and sustainability stand out as particularly disruptive.

On the other hand, the scientific community's interest in middle managers has increased significantly, as evidenced by the ever-growing number of publications on this topic, with a peak in 2023 indicating a growing scholarly focus on this group. Middle managers are examined from various angles and disciplines, reflecting their evolving role in response to systemic shifts in the labor market since the 1980s, such as deregulation and global competition (Goldstein, 2012; Hassard & Morris, 2021). Middle managers are

defined in multiple ways, reflecting their complex role within organizations: positioned below top management and above the first level of supervision (Dutton & Ashford, 1993; Uyterhoven, 1972 cited by Harding, 2014), employees who link top management with operational activities (Mintzberg, 1989), individuals two levels below the CEO and one level above the front-line staff (Huy, 2001), part of the managerial hierarchy that sits below top management but above supervisory levels (Floyd, 2008). However, these definitions often focus too narrowly on hierarchical structures. A more comprehensive definition would consider the broad spectrum of positions within middle management, acknowledging that “one size doesn't fit all” (Gjerde & Alvesson, 2020). Thus, the definition adopted here is broad, emphasizing middle managers as “managers with access to top management coupled with a very good understanding of operations” (Wooldridge et al., 2008, p.1192). As Nonaka (1994) also states, this central position allows them to mediate between strategic planning and daily operations.

Looking at the other literature avenue that is part of this research, digital transformation, alongside sustainability, represents a significant disruptive force for organizations needing continuous adaptation by the workforce. Over 80% of managers in the U.S. acknowledge digital transformation as a key strategic direction, yet success rates remain below 30%, even in digital, high-tech, telecom, and media industries (Boutetière et al., 2018; Kraus et al., 2022, Denning, 2023). The primary reasons for this limited success are employee resistance to change and management's lack of supportive behaviors. According to a Deloitte report (2020), these challenges are predominantly human-centric, stemming from the assumption that technology alone drives transformation. Digital transformation is the ultimate stage of technology's impact on an organization, encompassing digitization, digitalization, and the transformation itself (Verhoef et al., 2021). This involves fundamental changes in business models, products, processes, and organizational structures (Hess, 2015, cited by Kraus et al., 2022). McKinsey highlights that the people involved in change processes play the most crucial role in the success of these transformations, more so than the technologies used or top-down communication (Boutetière et al., 2018). Mantere (2008) emphasizes, “Organizations don't create, implement, or renew strategies. People do.” Thus, digital transformation means “becoming a data-driven organization where key decisions, actions, and processes are heavily influenced by data rather than human intuition” (Premuzic, 2021, p. 6).

This research aims to fill this gap by conducting a bibliometric analysis of the existing literature on the role of middle managers in digital transformations. The main research question is: What is the role of middle managers in organizations undergoing digital transformations? Yet more targeted questions need an answer: what is the role of middle managers in digitalization strategies, and how do they contribute to the decision-making process? Do middle managers feel listened to, involved, and supported? How do middle managers influence the success or failures of digital transformations? What are the challenges that they experience?

By systematically mapping the academic landscape, this study seeks to uncover the predominant themes, challenges, and opportunities that middle managers face in the digital age. The role of middle managers is multifaceted. They are not only implementers of technology but also agents of change, influencers of organizational culture, and innovation leaders. The challenges confronting middle managers during digital transformations are profound. They must navigate the resistance to change, manage the

integration of digital tools into existing workflows, and maintain team morale in the face of uncertainty. All of this while driving change that might make their roles obsolete (Gjerde & Alvesson, 2020). Moreover, the rapid pace of technological advancement means that middle managers must continually adapt their skills and strategies to keep up with new digital trends. Middle management is at a crossroads, in need of an update of the existing knowledge through the lens of digital transformation, a major disruptor of organizations.

## Methodology

The knowledge produced in the literature streams that are the subject of this paper - digital transformation and middle managers - is high. Both are multidisciplinary yet fragmented in terms of research (Snyder, 2019; Taracki et al., 2023). Literature in middle management has a long history, with the first article indexed in the Scopus database in 1956. On the other hand, digital transformation has been picking up strongly since 2017, exceeding 1,000 articles annually in 2023.

Considering the context, a suitable method is a bibliometric analysis. This methodology aims "at investigating the literature at a given domain from a quantitative point of view, taking into account leading institutions and countries, influential authors and papers." (Aria et al., 2020, p. 807). Identifying the main topics and research directions in a given field is also useful, highlighting structural and cognitive patterns in a domain (Aria et al., 2020). A well-conducted review creates a solid foundation for new knowledge creation and theoretical progress (Snyder, 2019). This paper follows clear steps to ensure data robustness and reliability. Considering the recommendation by Zupic & Cater (2015, cited by Aria & Cuccurullo, 2017), the research follows the next steps: Study design, Data collection, Data analysis, Data visualization, and Interpretation.

**Study design.** The research questions for defining the analysis are based on Aria and Cuccurullo's (2017) guidelines: What are the main trends and knowledge on middle managers and digital transformation? How has the research evolved? Which geographies, institutions, journals, and authors contribute, and how do they contribute? What key themes are addressed by the research community on middle managers and digital transformation? How are these connected, and what new themes emerge? Which authors and publications have the most influence? The timespan included is 2000 - 2024. The reason to start from 2000 is because technology evolved in the late '90s, with the spike of the World Wide Web. The first evidence of the impact of technology on middle managers' work is the introduction of email in 1996-1997, followed by BlackBerrys and smartphones in the years that followed (Hassard & Morris, 2021). This timespan should give us an end-to-end understanding of the impact of technology on managerial work.

**Data collection.** Most of the research done in the last 5 years related to digital transformation is focused on the digital strategy, the impact on business models, and targets top management. The research community is just beginning to examine the implementation challenges and their impact across different employee levels and organizational culture (Henderikx & Stoffers, 2022). For this reason, the database used for this paper was extracted from Scopus (<http://www.scopus.com>) to ensure enough

articles to analyze, considering Scopus's wider span (Van Eck & Waltman, 2017, cited by Aria, 2020).

For the middle management field, the following selection of keywords was used: „middle manager,” „middle management,” „middle-manage\*,” and „middle-level manage\*.” This combination of keywords was used by Heyden et al. (2023, p. 1925) as part of a bibliometric analysis meant to highlight the seminal contribution that Steven W. Floyd had on middle managers' understanding. With Bill Wooldridge, Floyd is considered the father of middle management research. In this context, the combination of keywords is highly reliable.

For the field of digital transformation, the following keywords were selected: “digital transformation,” “digitize,” “digitalize,” and “IT transformation.” This selection is based on the seminal work of Vorhoeft et al. (2021). In addition to this, a few keywords were added to increase coverage and include the latest trends: “digital\*,” “AI,” and “artificial intelligence.” In the end, the following keyword combination was used: ( TITLE-ABS-KEY ( "middle manager" ) OR TITLE-ABS-KEY ( "middle management" ) OR TITLE-ABS-KEY ( "middle-manage\*" ) OR TITLE-ABS-KEY ( "middle-level manage\*" ) AND TITLE-ABS-KEY ( "digital transformation" ) ) AND TITLE-ABS-KEY ( "digitize" ) ) AND TITLE-ABS-KEY ( "digitalize" ) ) AND TITLE-ABS-KEY ( "IT transformation" ) ) AND TITLE-ABS-KEY ( "digital\*" ) ), AND TITLE-ABS-KEY ( "artificial intelligence" ) ) AND TITLE-ABS-KEY ( "AI\*" ) ).

The filters used are English, “Business, Management and Accounting” field, and 2000-2024 timespan. For each digital transformation-related search term, a file was extracted. By combining the seven files, the result was 114 articles. After removing duplicates, a final list of 76 articles was left, representing the base for our later results. This is a critical step because the quality of the results depends on the quality of the data extracted (Aria & Cuccurullo, 2017).

**Data analysis.** For the data analysis, a key element is the use of co-word analysis. This leads to various semantic maps that help to understand the cognitive connections within a given field (Aria & Cuccurullo, 2017). The insights from this paper rely mostly on the keywords selected by the authors because these are the most comprehensive in representing an article's content (Zhang et al., 2016, cited by Aria & Cuccurullo, 2017). However, in some cases, Keywords plus, abstract, and title were also used because they can provide greater depth and variety in understanding the structure of the knowledge (Garfield, 1993, cited by Aria & Cuccurullo, 2017). The Bibliometrix tool was used for data analysis, visualization, and interpretation. This tool was developed in R language - an open-source solution, by Massimo Aria and Corrado Cuccurullo in 2017. The goal of the creators was to overcome the existing limitations of similar tools that only provide parts of the insights necessary for an end-to-end bibliometric analysis (Aria & Cuccurullo, 2017).

**Data visualization.** In Bibliometrix, there are several ways to plot the insights visually, all leading to bi-dimensional maps, dendrograms, and social networks (Aria & Cuccurullo, 2017), allowing researchers to understand relationships or overlaps in the scientific community.

As for the final step, which is interpretation, this has a dedicated chapter.

Results and discussion

The bibliometric analysis revealed several predominant themes, challenges, and opportunities middle managers face in the digital age. The findings confirm that middle managers play a crucial role in bridging the strategic objectives set by top management and their operational execution. They act as catalysts, implementers, and mediators in adopting digital technologies. The analysis also highlighted the importance of dual capabilities managers need, as well as several challenges, including managing change, fostering innovation while maintaining business continuity and dealing with resistance to change.

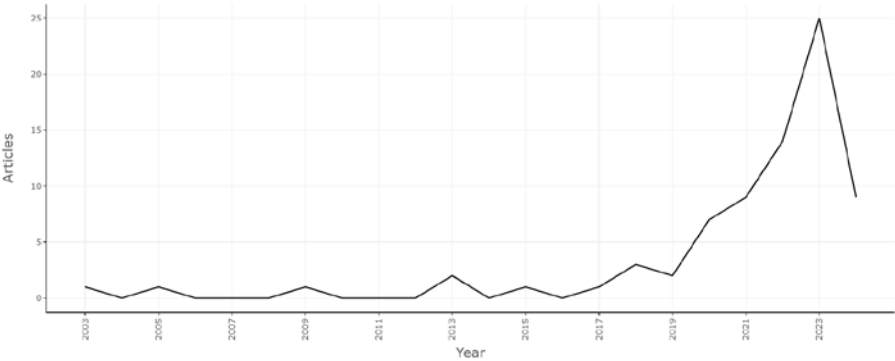
Overview

Even though the selected database starts with the year 2000, the first paper identified was in 2003, which means that the relationship between middle management and digital transformation emerged then, with a steady annual growth of 11.03% in the last 20 years. The documents’ average age of 3 years, indicating that most of the literature is concentrated in the previous years. 85% of papers are done in co-authorship. This is in line with the distinctive characteristic of contemporary research of being highly collaborative (Aria et al., 2020). On the other hand, only 34.2% are in international co-authorship, indicating a local approach to the research, which is either focused on one geography or one industry.



Figure 1. Overview of results  
(Source: Bibliometrix report, June 2024)

The annual progress on the topic follows an S-Curve. While the first themes emerged in 2003 and started slowly, looking more like a straight line, the topic eventually accelerated as the interest gained momentum in 2019-2020. This is related to the spike in digital transformation research, accelerated by the COVID-19 context (Brian et al., 2023).

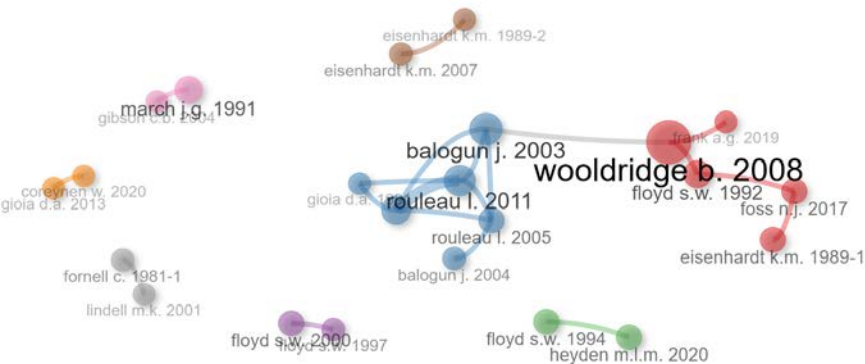


**Figure 2. Annual scientific production**  
(Source: Bibliometrix report, June 2024)

Most of the research is through papers - 53 pieces of research. Yet, there are also nine book chapters and seven conference papers, reflecting an interest shared in different formats with the research community.

By analyzing authors' work, the research is fragmented; most of the contribution is based on publishing one article (211 in 213 authors have 1 article associated). It can also highlight a lack of seminal contemporary work made on the topic, confirming the call to action of Taracki et al. (2023) that a more consistent, unified approach to the role of middle managers in the digital age is needed, as the current research is highly fragmented. Moreover, the research on digital transformation is at its beginnings when it comes to understanding the impact of digital transformations on employees' behaviors, organizational culture, and other layers of management other than top management (Henderikx & Stoffers, 2022).

With little exception reflecting research methods, most of the co-citation network is represented by researchers focusing on the middle management perspective and their cognitive processes, reflecting the history of middle management research.



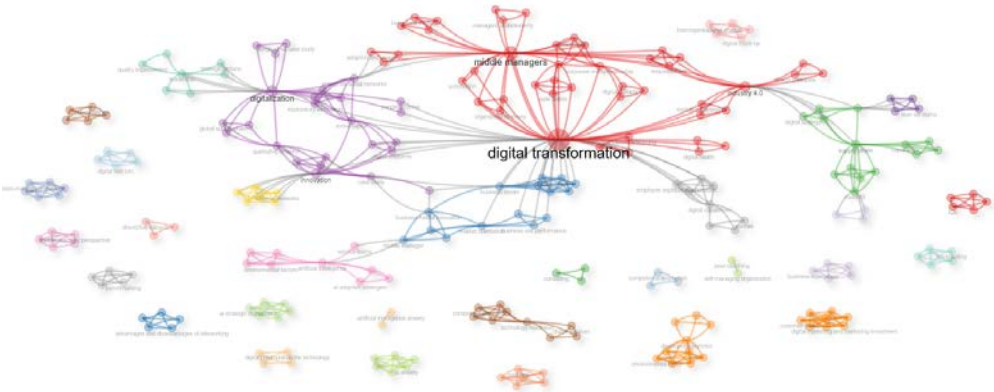
**Figure 3. Co-citation network**  
(Source: Bibliometrix report, June 2024)



### ***Knowledge findings***

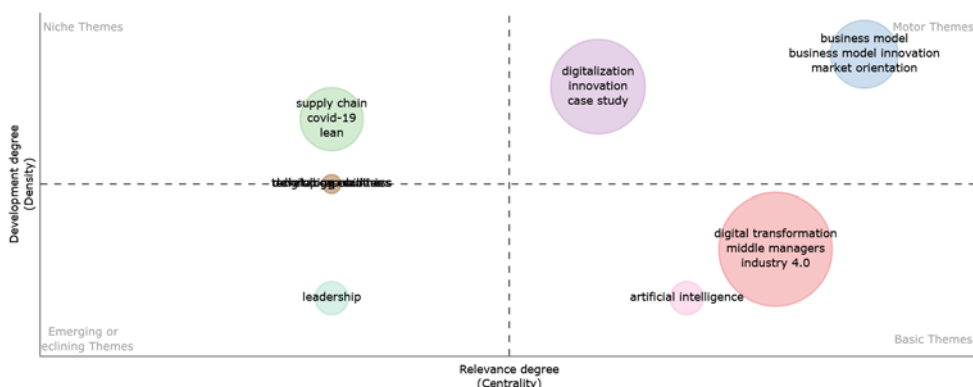
The main observation is that digital transformation is at the core of the research, with a strong connection to middle managers. This confirms the significant role played by middle managers in digital transformations. This is confirmed further on from several data points.

First, the *thematic map and the multidimensional scaling analysis* reveal digital transformation as a central theme, with the highest occurrences and centrality measures, indicating its pivotal role in the current research landscape. Looking at the biggest and closest connection, middle managers stand out, highlighting their significant role in digital transformations. They are closely associated with the central theme, suggesting their critical involvement in implementing and facilitating digital strategies. Other related terms like Industry 4.0 and ambidextrous learning indicate a focus on technological advancements and the importance of dual capabilities needed by middle managers in organizations undergoing digital transformations. This is particularly important as ambidexterity, which refers to the ability to combine explorative and exploitative capabilities, is a skill that is associated with the contemporary needs of organizations (Greven, 2023, p.1787).



***Figure 4. Thematic map based on keywords  
(Source: Bibliometrix report, June 2024)***

Second, by deep diving into the *thematic clusters and dominant themes*, a total of 9 clusters were extracted. Out of them, 3 clusters stand out as being more complex and covering more concepts: the cluster of digital transformation, which includes digital transformation, middle managers, industry 4.0, ambidextrous learning, corporate innovation, and digital innovation, the cluster of digitalization that includes innovation, enterprise social network, social capital and finally, the cluster of business model, that includes business model, business model innovation, market orientation, and middle managers.



**Figure 5. Thematic clusters**  
(Source: Bibliometrix report, June 2024)

Digital transformation, as part of the Basic theme cluster, is a very important theme encompassing transversal themes across the digital transformation field (Aria et al., 2020). Middle managers have a strong relationship with it, proving their significant role. This shows the widespread interest in how digital technologies are reshaping business practices, leadership roles, and organizational structures, with a strong focus on the human elements that facilitate or hinder these transformations. This fits very well with one of the most used definitions of digital transformation, which states that digital transformation means “becoming a data-driven organization, in which key decisions, actions, and processes are highly influenced by information rather than human intuition. In other words, you truly transform as an organization when you manage to change people’s behaviors in how things are done in your organization” (Premuzic, 2021, p. 6).

The role of middle management, in particular, is put in the spotlight in this working stream with papers such as “Performance Feedback and Middle Managers’ Divergent Strategic Behavior” (Taracki et al., 2018), “Opportunity or Threat? Exploring Middle Manager Roles in the Face of Digital Transformation” (Van Doorn et al., 2023). These papers discuss the critical role of middle managers in navigating and shaping strategic responses to digital transformation and organizational changes and show the complexity of processes they activate to enact their role.

However, Nadkarni and Prügl (2021) confirm in their comprehensive paper “Digital Transformation: A Review, Synthesis, and Opportunities for Future Research” that even though in the corporate entrepreneurship literature, middle managers are a central element of organizational transformation and their roles in any strategic execution is essential considering their position in the organization (Floyd & Wooldridge, 2008), there aren’t papers that cover the middle management perspective in digital transformation. The authors consider the subject to be highly neglected. Since 2021 until today, more authors have doubled down on this message (Taracki et al., 2023; Heyden, 2023). Taking this one step further, by looking at the middle management perspective on digital transformation between 2021 - 2024, there are a few such attempts. For instance, we have evidence that looks at middle managers’ reactions to the introduction of automation, notice the human-machine tensions, and how attributes such as tenure and expertise impact the adoption and attitude toward the introduction of automation (Van Doorn, 2023).



The conversation should be extended to AI, as there is little doubt that GenAI and chatbots, in particular, will revolutionize how work is being done (Ferraro et al., 2024). The paper examines the requirements for middle management roles in leading AI-integrated teams (Koponen, 2023). The paper addresses how middle managers perceived the impacts of AI system integration on their work characteristics, and it sheds some light on how they enact their implementation role in companies where AI has already been introduced. It also proves that middle managers' work becomes cognitively more demanding despite the promise of efficiency and productivity boost that AI implementations come with. These findings align with the "extensification" of managerial work documented by Hasard & Morris (2021) in their 2-decade study of how the experience of middle-management work has changed under corporate restructuring in the digital age. Other two papers highlight the growing importance of AI in operational and strategic functions within industries and across global corporations and prove the need to specifically focus academic efforts to develop the part of digital transformation related to the introduction of AI (Tehrani, 2024; Bazrkar et al., 2023). The limitation of all these papers is that they are qualitative and geographically limited.

*Solid research was done in the fields of digitalization and business models*, as is proven by their position as Motor themes. While the end goal is digital transformation, there are a few preliminary stages to it: digitization and digitalization. Digitization is the action of moving from analog to digital. It includes documenting internal and external processes without changing the activities that bring value to an organization, while digitalization involves changing business processes by introducing technology (Verhoef et al., 2021). It has as its main goals efficiency and improvements in customer experience. By deep diving into the papers, we observe a variety of perspectives that collectively highlight the broad impacts of digital technologies across various sectors, including the challenges of adapting to disruptive innovations, knowledge management, and social capital challenges and innovation and the specific dynamics of digital transformation in the public and private sectors (Lopez & Estevez, 2013; Berraies, 2019; Bagrationi et al., 2021). Notable case studies, such as Kodak's failure to adapt to digital photography, illustrate the importance of middle management in facilitating or hindering transformation and innovation. Kodak's middle managers could not pivot the company's strategy towards digital photography, leading to its decline. This case underscores the need for middle managers to be agile, forward-thinking, and capable of driving innovation (Lucas & Goh, 2009). For instance, "Only Senior Managers Lead Business Model Innovation, or Do They? Levels of Management and Dynamic Capability Deployment" (Funke et al., 2023) challenges the idea that only senior managers are involved in business model innovation, examining the roles of different management levels in deploying dynamic capabilities. Dynamic capabilities represent a key theme for digital transformation and a central concept in strategic management and organizational theory (Klaus et al., 2022).

COVID-19 represented, of course, a disruptor of workplaces, which is also reflected in its position here as a niche theme. The research is focused on how the pandemic influenced supply chain management, its implications on digital transformation, business models, remote work capabilities, and workplace dynamics, the so-called "new normal" (Chadee et al., 2019).

Having Leadership as an emerging theme opens up the conversation about the implications digital transformation has on leadership practices and processes that are

yet to be discovered. This stream touches upon the arsenal of skills and competencies for leaders, such as design thinking (Backstrom et al., 2018).

The clusters confirm a clear connection between middle managers and digital transformation. However, the line between them can be very delicate, and other perspectives must be considered. By analyzing the clusters transversally, some underlying themes were observed: resistance to change and the challenges and implications digital transformation has on different layers of management, particularly among the top and middle managers. This is particularly important because both of them are key perspectives that middle managers use to build their identity.

When it comes to *resistance to change*, middle managers often find themselves at the forefront of this resistance, as they are responsible for implementing new technologies and processes. They must navigate the complexities of organizational culture, employee attitudes, and existing workflows. Middle managers are themselves associated with resisting up to even blocking change. Research shows this comes from the lack of readiness and support, leading to a feeling that their subject position is challenged, so they must protect themselves and the status quo (Buick, 2017; Gjerde & Alvesson, 2020). While this is only a misconception for some authors, it is still associated with middle managers. On the other hand, middle managers also need to deal with their teams' resistance. Foundational research is conducted by Huy (2001), which lays the foundation for understanding how middle managers' emotional balancing capabilities can make a difference in the changes organizations pursue.

As for the relationship between middle management and top management, this can positively and negatively impact middle managers' behaviors, including those of resistance. Because of their position, middle managers are crucial in bridging the strategic objectives to the actual implementation. Yet, in the context of digital transformation, this becomes particularly important because it has different impacts on the layers of management - how they contribute, how they are affected, and the leadership styles needed (Henderikx & Stoffers, 2022). Top management ideas are not as self-evident as they think, and put middle managers in the position to implement changes they are subject to (Hayden, 2018). Top managers need to be aware that they need to build trust-based relationships with middle managers, as this leads to a willingness to change, limits the need for legitimacy that middle managers experience in workplaces, and democratizes access to innovation (Mantere, 2008; Funke et al., 2023). This becomes even more obvious since the process of digital transformation can be overwhelming, and both senior and middle managers need to play their roles in guiding the development of new digital businesses (Putra et al., 2024; Koponen, 2023).

## Conclusion

A bibliometric analysis of the existing literature reveals that middle managers are closely associated with digital transformation strategies. It also shows significant opportunities that need to be addressed for a more comprehensive understanding of their contributions and challenges. To the best of the author's knowledge, this research provides a first systematic review of middle managers' roles in digital transformations, showing the current state of research and highlighting valuable opportunities to take managerial practices in contemporary organizations further.

The very essence of the role of middle managers in any organization, which is given by their position, is to bridge strategy with execution since they have access to both top management with a very good knowledge of operations (Nonaka, 1994; Wooldridge et al., 2008). As Nadkarni and Prügl (2021, p. 267) observe, this alone should lead to the simple assumption that middle managers are the “kingpin of digital transformation.” Furthermore, by looking into the complexity of middle managers’ perspective research, the last 3 decades doubled down on their crucial role within organizations through the cognitive mechanisms they use in their work and the specific ways they contribute to strategy: upward and downward influencing, emotional balancing, sensemaking and sense-giving, discursive competencies, ambidexterity, and change management (Floyd & Lane, 2000; Huy, 2002; Thomas & Linstead, 2002; Rouleau & Balogun, 2011; Gjerde & Alvesson, 2020; Splitter et al., 2023; Greven et al., 2023). Moreover, they are seen as “knowledge engineers” with key contributions to knowledge creation and integration of new products. (Nonaka, 1994; Mantere, 2008; Heyden et al., 2018). Practical cases such as Kodak (Lucas & Goh, 2009) and more recent ones on Microsoft and Novartis (Denning, 2023) showcase middle managers play a pivotal role in the success or failure of digital transformations within organizations, while Kodak failed to adapt to the digital world, the latter examples are proof that leadership occurs in every layer of management and that transformation efforts start from the middle. McKinsey also highlights the pivotal role of middle managers. In their book, “Power to the Middle: Why Managers Hold the Key to the Future of Work,” the authors highlight the importance of middle managers in the digital age and propose a role redesign to reflect and support middle managers’ contributions.

Yet, at the present moment, *we are missing research* on this core element which is the middle managers’ perspective on digital transformation, more profound insights into managerial behaviors and decision-making processes during digital transformations. This is highly recommended by strategy-in-practice researchers, who mention how theory must acknowledge that middle managers don't live isolated; their roles, behaviors, and processes need to be examined in parallel with the major organizational changes they are experiencing (Mantere, 2008; Nadkarni and Prügl, 2021; Taracki, 2023). Another missing part is an update on how the role of middle managers should look in contemporary organizations that go through digital transformations (Porck & Van Knippenberg, 2023; Kringelum et al., 2023). Additionally, future studies could explore the impact of emerging technologies such as AI and machine learning on the roles and responsibilities of middle managers. As these technologies continue to evolve, they will likely redefine what it means to be a middle manager in digitally transformed organizations.

The fragmented nature of the current literature on middle management in digital transformation also calls for a more unified approach that should consider the interplay between strategic goals, operational execution, and the human-centric challenges that middle managers face. Furthermore, the importance of trust-based relationships between middle and top management cannot be overstated. These relationships significantly influence middle managers' behavior and their ability to implement changes effectively.

*Limitations.* Despite the insightful findings, the research has several limitations that must be acknowledged. First, the reliance on bibliometric analysis, while helpful in

mapping trends and identifying key themes, may not capture the nuanced experiences of middle managers across different industries and cultural contexts. The clusters confirm a clear connection between middle managers and digital transformation. However, the line between them can be very delicate, and other perspectives must be considered. The method limits the knowledge to research papers and overlooks highly valuable literature coming from consultancy companies, such as McKinsey's book, "Power to the Middle. Why Managers Hold the Key to the Future of Work." (Brian et al., 2023), which addresses pragmatically how and why the middle managers' role in the contemporary organizations should change. A final observation is related to the tool technology. While it is highly valuable for scientific work, one can not wonder how bibliometric analysis accuracy and depth of insights will evolve based on artificial intelligence. Finally, the research is limited to the selection made in Scopus. Even though the reasoning is explained in the methodological review, knowledge might be missed because of the database selected.

In conclusion, middle managers are indispensable in the success of digital transformations, being a key connection between strategic vision and operational execution. However, their roles and challenges are not fully understood, and there is a need for more comprehensive research to address the existing gaps. By exploring the contextual factors and processes that influence middle managers' effectiveness and understanding their cognitive processes, future research can provide valuable insights into how organizations can better support middle managers in driving and navigating the complexities of digital transformation.

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