

Managing Generational Tensions Toward Digital Transformation: A Microfoundational Perspective

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Abstract—The rise of digital technologies poses new organizational challenges, redesigning organizational structures, paving the way for new opportunities. Despite the growing body of research on digital transformation, there has been relatively little research on the microfoundational mechanisms that contribute to the successful digital transformation of workplaces. Drawing from the microfoundational perspective, this study examines managers' cognition regarding the digital transformation of the workplace, with a particular focus on how generational differences among managers influence such cognitions. To explore this topic, a case study was conducted using 25 semistructured interviews and field observations at a Dutch multinational enterprise. The findings identify key mechanisms related to digital transformation processes, highlighting how generational differences between managers belonging to Generation X and Generation Y necessitate efficient coordination to cope with organizational tensions and successfully pursue the digital transformation of workplaces. This coordination can be supported by orchestrating managers, a shared vision, and the development of a flexible paradigm. The study concludes with a discussion of the implications, limitations, and avenues for future research.

Index Terms—Digital transformation, digital workplace, gen X, gen Y, managerial cognition, microfoundations.

I. INTRODUCTION

THE fourth industrial revolution is fueling the application of digital technologies to complex systems, changing the nature of organizations and workplaces [1], [2], [3], [4]. The incorporation of such digital technologies in business processes is, thus, becoming a strategic imperative on top management agendas [5], [6], [7].

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From this standpoint, digital transformation can be conceived “as an organizational transformation that integrates digital technologies and business processes” [8], requiring significant changes in strategy formulation processes [9], more technologically-skilled human resources [10], and greater levels of agility and strategic alignment [11], [12].

Extant research focuses on the spread of digital technologies across organizational boundaries, exploring how such digital technologies are adopted and integrated into the existing systems and practices of different organizations. Most of the studies within this field of research have employed a macroperspective to examine how organizations implement digital technologies into their systems and practices (e.g., [13]).

However, research tends to overlook the significant impacts that meso- and individual-level factors can have on the success or failure of digital transformation processes [3], [14]. Against this backdrop, microfoundations literature supports academics in enriching the extant body of knowledge on digital transformation beyond the macrolevel of analysis, embracing meso- and individual-level perspectives [15]. A key issue in the study of microfoundations originates in the possibility of inferring key meso-level outputs by analyzing micro-level fluctuations and patterns [15], [16], [17]. Indeed, recent studies suggest that the success or failure of digital transformation initiatives within organizations is often determined by the cognitive framings, actions, and behaviors of individuals as the adoption and effective use of new technologies by these individuals can be a key factor in the overall success of digital transformation efforts [6], [18].

In this perspective, digital transformation can be seen as a socially-constructed phenomenon, relying on how individuals interpret and execute the strategy [6], [7], [13]. Accordingly, organizational change processes have roots in the analysis of cognitive microfoundations [19], as cognitive layers exert significant influence on action and coordination [20], [21], [22]. In this sense, cognitive frames are stable constructs that offer an individual lens to examine a given situation [23]. The interplay between cognitive elements (e.g., perceptions, beliefs) can act as an enabler of digital transformation, as cognitions orient individuals toward the implementation of effective action plans to process the organizational change [24], [25].

In order to understand such cognitive patterns within organizations, research has employed various theoretical perspectives. One such perspective pertains to the literature on generational differences. Generations can be thought of as discourses or mental frameworks that people use to understand the world around them [26], [27]. A generational differences perspective

suggests that different generations may exhibit different attitudes toward the adoption of new technologies since different generations show differences in terms of personalities, work values, attitudes, leadership and teamwork preferences, leader behaviors, and career experiences [27]. For example, newer generations may be more neurotic, extroverted, conscientious, and self-assured compared to older generations. Younger generations may also place a higher value on career proficiency and rely more on social connections.

Indeed, the examination of generational variations in the managerial cognitive frameworks can be a crucial factor in the integration of digital technologies within organizations [14], [28]. Consistently, several studies emphasize the cognitive dimension as a way to examine how digital technologies are framed, accepted, and integrated into organizations [24], [25]. Yet, most existing studies on the topic are built on a top-down approach highlighting how digital technologies spread within the organizational boundaries, while less attention has been devoted to how managers engage in the digital transformation process [7], [14]. To address this gap, following a cognitive perspective, in this study, we carried out 25 interviews with managers and numerous field observations at a Dutch multinational enterprise (MNE) following the prescriptions of grounded theory [29]. This case study examines the impact of digital transformation on the cognition of Generations X and Y managers in a Dutch MNE operating in the design furniture industry [30]. The industry's complexity and technological innovation make it an ideal context to explore the managers' cognitive processes regarding product development and innovation. Additionally, MNEs operating across different countries and cultures are particularly interesting due to the added complexity of managing digital transformation [30]. The findings contribute to the microfoundations literature by illustrating how managers' cognitive frameworks play a decisive/crucial role in successful digital transformations.

Also, Lyons and Kuron [27] called for qualitative analyses of generational differences in the organizational context. In fact, even if scholars agree on the existence of generational differences in the workplace, evidence has not always been convergent nor empirically supported [31]. Thus, by comparing the different beliefs on digital technologies of the so-called "Generation X" (i.e., people born between 1965 and 1980) and "Generation Y" (i.e., people born between 1981 and 1995), this study also contributes to the extant literature on generational differences in the workplace [26], [27], highlighting how such differences manifest in the digital landscape, and outlining key mechanisms to cope with them, relying on orchestrating managers, a shared vision, and the development of flexible paradigms.

The rest of this article is organized as follows. In Section II, we develop the theoretical background, reporting key concepts on 1) a microfoundational perspective to study digital transformation and 2) digital workplace transformation and generational differences. Next, we present the case background and research method in Section III. After that, we illustrate the emerging findings of the case in Section IV. The study concludes with a discussion of the main implications in Section V, and limitations and avenues for future research in Section VI.

II. THEORETICAL BACKGROUND

A. *Microfoundational Perspective to Study Digital Transformation*

Digital transformation is not just about the integration of digital technologies themselves, but it is mostly about strategy [6], [7], [13], requiring an agile alignment of organizational mechanisms and their underlying structures, processes, routines, business models, teams, and individuals [16].

Following these lines of reasoning, Appio et al. [16] framed the study of digital transformation around three levels of analysis. The first involves the changing nature of relationships between the organization and the surrounding ecosystem (i.e., macrolevel of analysis), the second pertains to firm-level capabilities, processes, routines, and business models (i.e., mesolevel of analysis), while the third relates to teams and individuals (i.e., microlevel of analysis). A major challenge within the analysis of the microlevel concerns how people and their interactions enhance macro- and mesolevel organizational outcomes [15].

At the macrolevel of analysis, digital transformation shapes industrial boundaries and reorganizes how firms are interconnected, offering opportunities and exposing firms to threats. At the mesolevel of analysis, scholars have focused on how organizations develop firm-level capabilities, processes, and routines to cope with digital transformation [16].

At the microlevel of analysis, scholars have highlighted the necessity to disentangle how individuals condition the transformational mechanisms, setting the ground for new business systems and underlying operating models [16]. Studies in this stream of research highlight how digital technologies affect routines and work practices. For example, Aversa et al. [32] showed how digital technologies affect employees' cognitions of space and time, which, in turn, is connected to the framing of organizational routines.

As suggested by Vial [33], the microfoundation theory is a theoretical lens we can use to examine how microlevel analysis affects digital transformation and the possibility of studying organizational outcomes by examining individuals as units of analysis [15], [17]. Following this line of thought, scholars acknowledge that the study of managerial cognitions is crucial to understand the process of organizational change toward digital transformation [22], [23].

Despite extant research, the microlevel of analysis has not been fully investigated, leaving the comprehension of how individuals contribute to digital transformation partly unfolded [3], [14]. As a result, this study adopts a microlevel of analysis to study how organizations realize digital transformation.

B. *Digital Workplace Transformation and Generational Differences*

Firms are responding to the challenges of the fourth industrial revolution by redesigning the way in which individuals work in digital workplaces [1], [4], [34]. Digital workplaces are "the physical, cultural, and digital arrangements that simplify working life in complex, dynamic, and often unstructured working environments" [2].

To enhance the probability of a successful redesign of workplaces in a digital fashion, firms have to increase individual connectedness (i.e., the extent to which individuals engage with each other, with stakeholders and customers, with information and knowledge, and with ideas within the organization, [2]), reducing the distance between the digital and physical dimensions.

Recent studies have highlighted the necessity to analyze how digital technologies are processed and integrated within organizations [1]. In this perspective, digital workplace transformation is defined as “a phenomenon of new technologies causing the cognition of significant changes to a variety of work-related aspects” [35], related to coping with challenging tasks and processes, framing social relations, and improving the overall work experience.

Despite scholars having acknowledged the theoretical relevance of analyzing the digital transformation of workplaces, this phenomenon is often regarded as multifaceted and complex [1], [2]. Given this complexity, adopting an adequate lens may be necessary to study the phenomenon. Following the argument by Shore et al. [36], a way of studying digital transformation is to rely on diverse sources within organizations. In the organizational context, generational differences among individuals represent a relevant source of diversity [27]. In this stream, scholars have theorized that generational differences should clearly emerge in the organizational domain [26]. In this regard, Joshi et al. [37, p. 393] clarified that the concept of generational identity is a multifaceted construct defined as “an individual’s knowledge that he or she belongs to a generational group/role, together with some emotional and value significance to him or her of this group/role membership.” Therefore, generational differences have roots in different collective memories of shared events that occurred in the generation’s late formative years [38], as well as biological factors, generational differences influence people’s personalities, emotions, cognitions, and behaviors [27].

In the context of workplaces, the literature on generational differences has shown that generational differences exist in terms of personalities, work values, work attitudes, leadership and teamwork preferences, leader behaviors, and career experiences [27]. For example, newer generations are more neurotic, extroverted, conscientious, and self-assess themselves more positively than older generations. Likewise, younger generations express a higher interest in career proficiency and rely more on social configurations. As regards technological shifts, a key contribution to an extant literature is provided by Foster [31]. In her study, Foster [31] conceptualized generations as discourses or mental structures people leverage to decode the context where they are embedded. Based on the narratives provided by the participants of her study, she mapped generation as a difference, where individuals recur to the concept of generation to explain shifts in work orientations, and generation as a socio-historical dynamic, where the concept of generation is used to frame progress (e.g., technological change). When generational differences emerge, managers can perceive them as an opportunity to leverage diversity and converge value from different sources in a unique path toward organizational change [26], [27].

In spite of the growing amount of studies on generational differences within organizations, scholars have not yet

articulated a detailed map of causal relationships among this source of diversity and organizational-level variables regarding strategy-making processes, performance outcomes, and successful organizational changes [26]. Given this gap, and the necessity to shed more light on how the microlevel of analysis interacts with the meso- and macro-levels, in this study, we focus on how managers belonging to different generations process digital transformation through a cognitive lens.

III. CASE BACKGROUND AND RESEARCH METHOD

This study is based on a qualitative approach and particularly on a case study research [39]. This methodological choice was made to analyze managerial cognitions in the context of digital transformation, emphasizing the generational differences among managers and how the organization coped with them. A single case study is particularly suitable for microlevel processes [30].

A. Sample and Setting

This case study focuses on Generations X and Y managers operating in a Dutch-based MNE. We argue that examining Dutch MNEs in the design furniture industry offers an appropriate analytical context, given the distinctive characteristics of their ecosystem [30]. In particular, the technological innovation and complexity of the industry allow for a nuanced investigation of the impact of digital transformation on managers’ cognition, especially on the processes of product development and innovation [30]. In addition, MNEs operating in multiple countries and cultural contexts are particularly relevant to this study due to the added complexity of managing digital transformation. Dutch MNEs have advanced technological capabilities and can provide insights into how managers’ experience and knowledge of digital technologies influence their cognition [30]. Data collection lasted from March to September 2022. We collected qualitative unstructured data focused on managers employed by the firm at the time of research. Specifically, we concentrated on understanding how Generations X and Y managers frame digital environments and which mechanisms arise to cope with emerging tensions.

Overall, the sample included 25 managers between 26 and 58 of age. Managerial profiles involve product managers, category managers, account managers, tender managers, middle managers, digital asset marketers, communication advisors, sales managers, interior architects, design managers, digital accelerators, global sales managers, and general senior managers. The sample is composed of 13 managers belonging to Generation X and 12 managers belonging to Generation Y.

B. Data Collection and Analysis

We adopted a qualitative method based on semistructured interviews to develop our study. The semistructured interviews were conducted at the MNE’s headquarters in The Netherlands. Each interview lasted about 60–90 min. In addition to the qualitative data from the interviews, we collected data from organizational documentation and the official website. In order to gain a more thorough and comprehensive understanding of

the case study, we used a triangulation approach, incorporating data from various sources. This allowed us to capture a more nuanced and well-rounded view of the organizational practices we studied and to better align our findings with the realities within the organization. By using multiple sources of data, we were able to increase the validity and reliability of our findings, providing a more robust and accurate depiction of the case study.

The data collected for this study were processed using an iterative grounded theory coding process. This involved regularly reviewing and analyzing the data as well as relevant literature to allow categories and themes to emerge from the material [29]. We started the analysis by examining publicly disclosed materials, mainly based on information retrieved from the official firm website, articles in the business press, magazines, and some informal conversations with industry experts [29].

As prescribed by grounded theory methodology [29], we employed a three-step coding process that involved a constant cross check of inferred information. In the first step, we generated open codings based on the *in vivo* codes present in the terminology used by the interviewees. Then, we used these codes to identify patterns and create first-order indicators [40]. In the second step, we clustered similar patterns together to generate more abstract categories (i.e., second-order concepts). Finally, in the third step, we identified the four emerging theoretical themes and analyzed the relationships between the second-order concepts and the aggregate analytical dimensions.

Based on the patterns that emerged during the initial coding process, we conducted a second review of the literature to further refine the second-order concepts. We constructed a model (reported in Table I) to represent the connections and interactions between the first-order indicators, second-order concepts, and theoretical themes. To improve the understanding of our findings from the microfoundational perspective, we also analyzed the second-order concepts in light of their distinctive microlevel components, drawing on the conceptualization proposed by Felin et al. [41]. According to this, we derived organizational routines and capabilities from three basic microfoundations (i.e., individuals, social processes, and structures) or their interactions.

IV. FINDINGS

Fig. 1 summarizes the findings that emerged. Findings highlighted the presence of managerial cognitions associated with digital transformation. These findings are categorized into four higher order themes, i.e., digital literacy, social embeddedness, integration of multiple modes, and overcoming complexity. Generations X and Y managers exhibit differences and shared cognitions related to the four constructs. From the interaction between managers of different generations, organizational tensions arise. Such tensions are loosened by the action of orchestrating managers who support digital transformation efforts. Said differently, the actions of the orchestrators support the resolution of generational tensions, acting as generational mediators. The improvement of digital literacy, the social embeddedness of individuals, the integration of multiple modes, and the overcoming of complexity, together with the support of generational

TABLE I
FIRST-ORDER INDICATORS, SECOND-ORDER CONCEPTS, AND THEORETICAL THEMES

First-Order Indicators	Second-Order Concepts	Theoretical Themes
Adoption of digital systems instead of analogical processes Developing new digital capabilities in current ways of working Facing new experiences in the workplace Dealing with the time to change paradigm	<i>Learning new digital paradigms</i>	Digital literacy
Meetings on a continuous basis support the creation of agile teams Digital tools as collaboration enablers Dedicating time to build relationships within the work environment Creating informal networks within the organization	<i>Collaboration to carry out difficult tasks</i> <i>Social integration of the individuals within the organization</i>	Social embeddedness
Embedding the physical and virtual sphere Effective time management Seek for smart solutions to satisfy consumers Choosing the optimal place to perform activities	<i>Hybrid modalities of work</i> <i>Efficient individual resource allocation</i>	Integration of multiple modes
Proficient coordination of several individuals Handling multiple consumer pressure Keeping high-performance standards Managing the surrounding noise	<i>Coping with organizational tensions</i> <i>Improving processes and routines</i>	Overcoming complexity

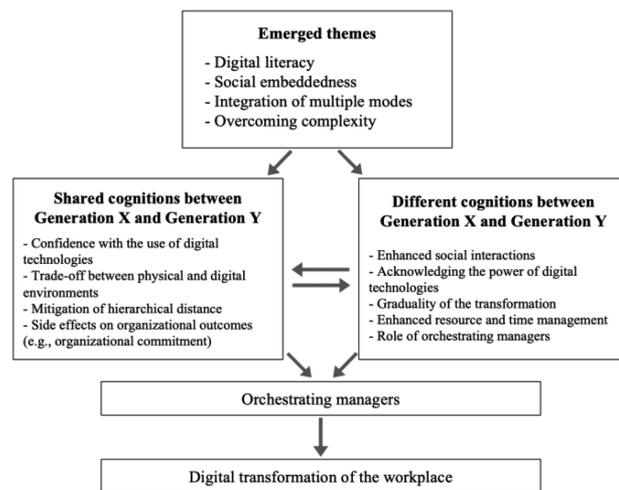


Fig. 1. Data synthesis.

mediators, foster a successful digital transformation of the workplace. Table II lists selected quotes of each second-order concept.

A. Digital Literacy

The rapid expansion of digital technologies in the business domain requires individuals to acquire new skills and

TABLE II
SELECTED QUOTES

Theoretical themes and interpretations	Selected evidence on second-order concepts
<p>Digital literacy</p> <p>Digital literacy is a key factor that influences an organization's ability to shift to the digital paradigm. This includes managers' prior knowledge, individual experience, and ability to adapt to learning new digital paradigms. To successfully integrate digital technologies, it is imperative for managers to balance innovation while maintaining established processes and routines that work for the organization.</p>	<p>Learning new digital paradigms</p> <p>Quote 1: "Digital adoption has allowed us to improve many processes and routines that needed to be refresh. You know on the one hand you have to recognize that you have to innovate and make routines more efficient, and digital tools are supportive in this sense. But you also have to recognize that we were a top company even before we adopted the digital elements/aspects/processes. So, the point is to find a balance. We can't destroy what works but we have to make it work even better. Therefore, I think we learned new capabilities by starting from our previous base of knowledge. And I think this is easier by leveraging the process knowledge of those who have been working here for a long time with the technical and innovation knowledge of those who came in to lead the digital adoption process" (Generation X manager).</p> <p>Adapting to new digital scenarios</p> <p>Quote 2: "This [digital transformation] would not have been possible if not through everyone's willingness to understand different needs and support each other" (Generation X manager).</p> <p>Quote 3: "The middle managers have a crucial role in the digital transformation process. They guide the company and its employees along this process by enabling incremental adaptation, knowledge exchange, perseverance, and resilience" (Generation X manager).</p>
	<p>Integration of multiple modes</p> <p>Advanced cognitive skills are required to efficiently allocate individual resources and facilitate adaptive and multidimensional learning processes for the successful integration of multiple modes into organizational routines. Within hybrid work modalities, digital technologies offer a wide range of functionalities that can support different tasks.</p> <p>Efficient individual resource allocation</p> <p>Quote 10: "I prefer working from home, no doubts. Then you are just much more effective" (Generation Y manager).</p> <p>Quote 11: "These process improvements come at a cost. More employees might be inclined toward opportunistic behaviors. The social ties of the organization might weaken, leaving us more vulnerable in the labor market as we cannot retain skilled people" (Generation X manager).</p>
<p>Social embeddedness</p> <p>Social embeddedness deals with how individuals within an organization are connected to each other and to the organization's goals. Digital technologies can enhance social embeddedness by improving communication, enabling flexible teams, and supporting collaborative efforts. By fostering communication across boundaries and timely conflict resolution, digital tools can help overcome hierarchical constraints at the structural level and facilitate productive collaboration.</p>	<p>Collaboration to carry out difficult tasks</p> <p>Quote 4: "The risk of a disjoint organization is the lack of a clear shared vision, there are too many separate groups that are involved. Digital tools help, at least partially, overcome these divisions and create more productive collaborations and diminish the chance of errors" (Generation X manager).</p> <p>Quote 5: "Digital devices are handy, you can always find things and look them up. What I say is I have the flexibility and all the tools to nimbly work with colleagues" (Generation X manager).</p> <p>Social integration of the individuals within the organization</p> <p>Quote 6: "I think video calling is very important for quick things, such as informing about daily developments in a job or clarifying minor doubts about a project and activities, also a simple text message during working hours. Using digital technologies for communicating</p>
	<p>facilitates the ease of communication also with superiors" (Generation Y manager).</p> <p>Quote 7: "But, also after digital adoption, in the decision trees, so to speak, the director is quite far away from you. I still perceive a certain degree of formality in these relationships" (Generation X manager).</p> <p>Hybrid modalities of work</p> <p>Quote 8: "It's obvious that digital technologies support users in a variety of activities, but it depends on the type of activity. For example, I think virtual meetings are sometimes genuinely nice and good to meet for a brief update, but it is difficult to merge all ideas effectively in a virtual environment" (Generation X manager).</p> <p>Quote 9: "You can actually have more meetings, therefore, you can better manage and exploit your working time" (Generation X manager).</p> <p>Coping with organizational tensions</p> <p>Quote 12: "I now mainly try to have meetings with customers face to face. I always think that's important because it allows you to switch gears more easily, read body language, and it's just nicer to have a conversation, it's more personal" (Generation X manager).</p> <p>Quote 13: "I prefer to meet new customers physically to engage in more informal conversations and increase mutual trust" (Generation Y).</p> <p>Improving processes and routines</p> <p>Quote 14: "I don't think adopting online meetings decrease your capability to manage the noise. It depends on how you manage the meeting. The meeting manager should always provide clear indications on how participants have to behave and when they must intervene. But you can have the same difficulties in presence when many voices talk together at the same time" (Generation Y manager).</p>
	<p>Overcoming complexity</p> <p>Organizational tensions can be managed by utilizing social interactions, specifically face-to-face meetings, which have been prioritized by Generation X and Y managers due to the benefits of reading body language and engaging in informal conversations, leading to increased mutual trust and the ability to switch gears easily. Additionally, cognitive framings can be employed to manage online meetings effectively by providing clear guidelines to participants, preventing meeting noise, and maintaining productivity, which is integral to enhancing organizational processes and routines.</p>

competencies to carry out complex tasks and solve novel issues in the digital landscape [42]. The acquisition of such new skills and competencies can be labeled as "digital literacy" [43]. The selected firm aimed to increase individual digital literacy by promoting the learning of new emerging digital paradigms (see Section IV-A-1) and gradually adapting to new digital scenarios (see Section IV-A-2) (see Table II for selected quotes). Individual-level (e.g., managers' prior knowledge and experience) and process-level (e.g., incorporation, adaptation,

incremental adjustments, situated learning, and informal forms of coordination) components affect the learning of and the adaptation to such new digital paradigms.

1) *Learning New Digital Paradigms*: The interviews show a higher propensity of Generation Y managers to deal with digital technologies as opposed to Generation X managers. Generation Y managers perceive these digital technologies as "logical," "simple," and "intuitive," facilitating internal processes and communication. Generation X managers perceive digital

technologies differently from their younger colleagues. For instance, most Generation X managers recognize the potential of digital technologies but experience difficulties in integrating them into day-to-day operations (“*When digital systems were first introduced in our routines, I had some trouble learning how they worked*”—Generation X manager).

In addition, a Generation Y manager noticed that for a successful digital transformation, “*it is necessary to establish well-defined roles and tasks. It’s like there is a gap between our employees: some possess advanced knowledge of the processes and business practices, and others are digitalization experts: The groups first proceed separately, then, they are put to work together to refresh routines.*”

Both generations recognized the necessity of coordination and guidance. Still, generations found different levels of ease in integrating digital solutions. The reasons for these different intergenerational managerial cognitions of digital adoption may lie in the managers’ prior knowledge that leads to the asymmetrical development of digital capabilities between the two generations. Prior knowledge represents the strategic heritage, whereby all employees can ensure operational continuity and avoid process disruption while developing new digital capabilities. A Generation Y manager used the expression “*brick by brick*” to describe this construction process. The importance of prior knowledge is confirmed by the evidence that digital transformation helped the firm to “*innovate and make routines more efficient*” (Generation X manager) but, at the same time, the firm had a leading competitive position in its sector even before undertaking such digital transformation (see Quote 1).

2) *Adapting to New Digital Scenarios*: As reported by a Generation X manager, mutual support among managers belonging to different generations has played a central role in the success of digital transformation (see Quote 2). This mutual support allowed the firm’s managers to partially overcome the difficulties experienced during the digital transformation. In fact, this process was complex and required several short-term adjustments and radical changes in the medium run.

At first, managers of both generations experienced that the digital transformation had slowed down several processes that worked fluently prior to the change. The situation improved over time as the middle managers sustained the digital transformation process (see Quote 3). These professional profiles acted as orchestrators during the different digital transformation phases, supporting the digital transition process over time. In this regard, a Generation Y manager highlighted that “*My task was to remove obstacles during the digital transformation to prevent issues in the process. You know, the importance of this is crucial: You have to secure the daily processes and routines by being forward-looking.*”

B. Social Embeddedness

Social embeddedness can be conceived as “*the extent to which individuals are engaged in stable, repeated, multiplex social exchanges*” [44], [45]. The degree of social embedding of individuals in an organizational network depends on their identification with the network, which lessens the gap between

the self and the organization [44]. As a result of our analysis, social embeddedness mainly refers to two second-order themes, i.e., collaboration to carry out difficult tasks (see Section IV-B-1) and social integration of the individuals within the organization (see Section IV-B-2) (see Table II for selected quotes). Understanding these two concepts is essential for defining the firm’s efforts toward intraorganizational identification and commitment development. The microcomponents of processes and structure come to the fore in relation to social embeddedness. Concerning the process dimension, digital technologies enable the creation of flexible teams, improve the organization’s ability to timely address emerging problems, and facilitate collaborations based on mutual support. Sharpening digital processes allows the firm to overcome the potential constraints deriving from a tall organizational structure by enabling bottom-up and cross-boundaries forms of communication.

1) *Collaboration to Carry Out Difficult Tasks*: Generations X and Y managers agree that meetings on a continuous basis help the firm create more flexible teams, able to leverage digital technologies to develop multiple projects. For instance, a Generation Y manager reports: “*We can work even more flexibly in a virtual environment compared to physical systems.*” Digital workplaces enable problem-solving dynamics based on mutual exchange, collaboration, and strengthened relationships with colleagues, as suggested by a Generation X manager (see Quote 5). A Generation Y manager suggests that continuous meetings with colleagues are aimed at planning, discussing, getting feedback, and finally providing suggestions on the best use of new technologies: “*[Digital transformation] is a process that needs to be accompanied step-by-step and, I think, it’s best done as a team. Now collaborating is easier by leveraging such versatile digital technologies.*” Therefore, we record that managers perceive meetings with colleagues as effective working modes to facilitate the digital transformation process and carry out daily work activities in coordination. In particular, digital technologies can help large corporations overcome the lack of interconnection among organizational units (see Quote 4).

2) *Social Integration of the Individuals Within the Organization*: Digital technologies connect managers on multiple levels by enabling bottom-up, cross-boundaries communication and rapid adjustment. Generations X and Y managers show diverging cognitions concerning how digital transformation affects communication speed, work relationships, and informal network creation. Generation Y managers believe that digital technologies support horizontal communication among colleagues and vertical communication with senior managers. A Generation Y manager perceived reduced distance from his superiors due to the application of digital solutions. Thus, digital applications made communication more flexible among individuals with different hierarchical positions, especially for quick things and minor issues (see Quote 6).

Generation X managers show enhanced attention to building relationships in a physical environment. Such orientation can explain why managers interpret the social sphere of digital transformation differently. A Generation X manager stated: “*For me, it is necessary to meet face-to-face. It raises the social aspect*

of being here just to see some colleagues.” On the contrary, Generation Y managers mainly show a higher propensity for virtual exchanges. Their cognitions of digital technologies are influenced by task accomplishment and functional and instrumental issues. Generation Y managers tend to think that *“meeting in presence remains important for first encounters or first project teams. Subsequently, it can become just a bit more inconvenient, therefore, if you use digital tools, then it’s fine [...] because you catch up and you’re done”* (Generation Y manager).

Multiple Generation X managers’ report that digital technologies appear not to have helped overcome relational barriers with superiors (see Quote 7). Instead, the interviewed Generation Y managers found informal channels instrumental to reducing hierarchical divisions.

C. Integration of Multiple Modes

The integration of multiple modes at work broadly pertains to the sphere of self-management, learning to cope with the plurality and coordination of different types of activities [46]. Thus, embracing multiple modes of work and different tasks enhances time and resource management, stimulating continuous learning and individual flexibility at work [47]. Our analysis shows that the theme of multiple modes integration is divided into hybrid modalities of work (see Section IV-C-1) and efficient individual resource allocation (see Section IV-C-2). Table II provides the selected quotes. By integrating multiple working modes, individuals and processes can more effectively embrace their microcomponents. This approach requires cognitive capacities of guiding resource allocation and facilitating flexible, multispace learning processes.

1) *Hybrid Modalities of Work:* In the firm under study, it emerged that physical and virtual spheres complement each other. They allow workers to alternatively perform different tasks by choosing the most suitable place to maximize the expected results. For instance, team-communication software supports one-to-one meetings and larger but quick meetings. However, when the number of participants reaches a specific critical threshold, the marginal benefit of a virtual meeting diminishes. Generations X and Y managers share this cognition. A Generation Y manager said he prefers virtual meetings *“to tick things off briefly”* or *“for 1 on 1 meetings.”* However, he finds *“virtual tools unsuitable for larger meetings where tough decisions must be made or for an entire brainstorming session. That must be physical.”* Therefore, it emerges that the highest perceived utility depends on the kind of activity that needs to be performed, as reported by a Generation X manager (see Quote 8).

Generations X and Y managers agree upon the time management effectiveness promoted by digital technologies. Digital work allows organization members to save time, avoid time-consuming commuting, and concentrate on the most value-added activities, as reported by a Generation Y manager. In addition, by optimizing time, digital work potentially increases the number of activities one can perform every day. Therefore, effective time management enabled by digital work raises the productivity frontier to a higher level (see Quote 9).

2) *Efficient Individual Resource Allocation:* Digital technologies also facilitated more efficient individual resource allocations. As confirmed by a Generation X manager, *“Digital adoption speeds up this process [finding new solutions for customers] since our organization can communicate real-time information and overcome knowledge limitations about the market by promoting cross-boundaries collaboration.”* Therefore, digital adoption increases the organizational ability to activate cross-fertilization mechanisms to overcome structural rigidities.

Generation Y managers agree that digital work can lead to a productivity increase through better individual resource allocation and more flexibility at work (see Quote 10). While discussing with managers from Generation Y, the digital technologies were often adopted with relatively low effort, while Generation X managers spent more effort to gradually adapt to this new work mode. Similar to Generation Y managers, Generation X managers agree that *“digital solutions go in the direction of flexibility. By deciding where to work, I can keep up with the pace of my life, family, and leisure.”* However, driven by the desire to build relationships in a physical environment rather than in a virtual context, Generation X managers show some resistance to the wide adoption of virtual solutions. Also, Generation X managers perceive work in a physical environment as a way to preserve high organizational commitment and identification.

Indeed, Generation X managers tend to believe that digital technologies negatively affect the firm’s long-term productivity, as a growing number of employees will decrease their commitment (see Quote 11). In other words, Generation X managers tend to embrace a long-term vision when evaluating digital adoption consequences. They contend that fewer interactions within the work environment may weaken the organization’s lock-in mechanisms to retain skilled employees, which may embark on the search for a new job to fulfill their career expectations.

D. Overcoming Complexity

The concept of complexity relates to the computational difficulty that characterizes business activities and day-to-day operations [48]. Complexity is based on dealing with a plurality of objects and actors [49], and it requires cognitive efforts in terms of coordination and constant process improvements [50], [51].

In the context of this research, the analysis revealed that the theme of organizational complexity can be decomposed into coping with organizational tensions (see Section IV-D-1) and improvement of processes and routines (see Section IV-D-2). Table II lists the selected quotes. The broad sphere of organizational complexity refers to the microlevel components of individuals and processes, where social interaction between individuals and cognitive capabilities facilitates organizational routines and orchestration through digital technologies that increase operational efficiency.

1) *Coping With Organizational Tensions:* Digital transformation constitutes a valuable opportunity to deal with organizational tensions. Managers and employees can easily access

stored space on the cloud, combining knowledge and information compared to collaborating in nondigital environments. Thus, people operating in the organization can update files and share information in real time with reduced time lags. Generations X and Y managers share the cognition that digital technologies offer effective support in this sense. Indeed, *“digital adoption improves the coordination between us and our employees. For example, we have a general place where we can store everything, which everyone can access”* (Generation X manager), *“digital technology is very important in terms of coordinating quick operations”* (Generation Y manager), and *“if you call someone immediately by virtual means, you will have direct contact and you will have your answer much faster. The entire process becomes, to say, well-coordinated”* (Generation Y manager).

Digital transformation of workplaces supports managers and employees in coordinating internally while increasing their ability to cope with external stakeholders, such as handling multiple customer requests. The first contact with customers often requires physical face-to-face meetings to make the conversation more personal, analyze body language, increase empathy, and strengthen trust. This opinion is shared by Generation X (see Quote 12) and Y managers (see Quote 13).

2) *Improving Processes and Routines*: Digital technologies can help a firm to deal with high pressure and absorb intense work rhythms. As suggested by a Generation Y manager: *“It is not easy sometimes, delivery performance is difficult, and customer satisfaction puts additional pressure. Every company has some degree of chaos, and the pressure is always fully on. That just is, so yes. In these contexts, digital adoption is timely because it assists us with keeping performance high while under pressure.”*

However, Generations X and Y managers share the cognition that the outcomes of digital transformation initiatives largely depend on the ability to orchestrate activities in the digital workplace. Orchestration and coordination activities are crucial to aligning the digital capabilities and business knowledge expertise between different generations. Therefore, the role of the coordinator appears to be crucial. The firm should arrange all the necessary corrective mechanisms to prevent inefficiencies. A Generation Y manager argues that adopting virtual tools does not guarantee the productivity of the interaction. *“It depends on how you manage the meeting. The meeting manager should provide clear indications of how participants have to behave and when they must intervene. But you can have the same difficulties in the presence of many voices talking together at the same time.”* Generation X managers highlight that an increase in short- and medium-term individual productivity may come at some costs, such as social interaction, organizational commitment, and identification reduction.

In addition, Generations X and Y managers also share the knowledge that side effects related to the crowding of working spaces are not completely overcome by using digital technologies. For example, during an online meeting, *“if you are with about ten people, it does not matter the technology but your ability to manage the tone and the rhythm of the conversation”* (Generation X manager). Therefore, managing noise appears to

be associated with management capabilities and behavioral attitudes and not with digital technology adoption (see Quote 14).

E. Comparing Generations X and Y Managers: Differences and Shared Cognitions

In summary, Generations X and Y managers share some commonalities in their perception of digital technologies within the organization. However, some notable differences remain. For example, concerning digital literacy, Generation Y managers appear more confident. Generation X demonstrates a slower learning pace and less effective short-term adaptation capability of the new digital paradigm than their younger colleagues.

At the same time, Generations X and Y managers show similar perceptions in relation to the gradual and incremental logic underpinning digital transformation. Digital learning and capability development imply long-term adaptation and step-by-step switches to prevent side effects while entering such a digital transition. Generations X and Y managers cooperate to facilitate this digital transition.

Although Generations X and Y managers both value social embeddedness, they have significant differences in their approaches. Generation X managers emphasize the relevance of building relationships in physical environments more than Generation Y managers, as Generation X managers believe that the physical environment can enhance organizational commitment and identification. Interestingly, Generation Y managers tend to integrate the digital paradigm more than Generation X managers, boosting work effectiveness and improving time and resource management.

Generations X and Y managers also exhibit perceptual differences regarding the effects of digital technologies in mitigating pressure from higher hierarchical levels. Generation X managers tend to believe that digital technologies do not alleviate existing hierarchical divisions. Generation Y managers argue that digital technologies might reduce formal distance as they facilitate more immediate interactions.

Despite these divergences, Generations X and Y managers share many perceptions. For instance, concerning the integration of multiple modes, Generations X and Y managers share similar views on physical–virtual embeddedness and time management. Specifically, both generations concur that digital technologies better facilitate online communication when a limited number of people participate in the debate. Also, Generations X and Y managers agree on the importance of meeting regularly to develop flexible work routines and teams, on the centrality of digital technologies in creating horizontal informal networks and overcoming structural rigidities, and on their low effectiveness in sustaining major project development activities. Both Generations X and Y managers believe that digital technologies are highly effective in terms of enabling minor and quick adjustments and that digital technologies contribute to fostering digital coordination within organizational boundaries.

Generations X and Y only partially agree on the effectiveness of digital technologies when it comes to seeking smart solutions for customers. In fact, while they believe that digital work enables new systems to generate cross-contamination effects,

thus improving the firm's ability to develop customer-oriented plans of broad scope, they show substantial differences of opinion on the wide-ranging impact of digital technologies. For Generation X managers, the effective use of digital technologies can support individual skills and knowledge to cope with markets and consumers. Generation Y managers believe that digital technologies can also be used to build new knowledge and acquire key information about markets and consumers.

Finally, both Generations X and Y managers perceive digital technologies as a lever to improve coordination. Managers of both generations acknowledge that orchestrating managers are relevant figures that coordinate human resources in the pursuit of digital transformation.

V. DISCUSSION

The present study contributes to two main streams of research: the microfoundational and generational differences literature. To begin with, this study contributes to the ongoing academic debate on the microfoundations of digital transformation, examining how managerial cognitive frames affect the digital transition process. Specifically, we analyze how managers frame digital technologies around four key dimensions: digital literacy, social embeddedness, integration of multiple modes, and overcoming complexity. Our case study shows that orchestrating managers support these dimensions to facilitate a successful digital transformation of the workplace. Precisely, digital literacy and social embeddedness encompass the importance of collective alignment in an attempt to build a shared vision. Integration of multiple modes and overcoming complexity relate to the need to pursue a flexible paradigm.

Microfoundational theory suggests that macrolevel outcomes are the result of mesolevel and microlevel actions and interactions [15], [16], [17]. Thus, the present study contributes to the microfoundational theory by bridging microlevel outcomes to digital transformation. In the context of digital transformation, microfoundational theory implies that the successful implementation of digital transformation initiatives at the organizational level depends on the actions and interactions of individuals at the microlevel. The study shows how microlevel attitudes and behaviors could affect organizational paradigms while orchestrating managers can mediate digital transformation processes by reconciling organizational tensions and rigidities. In this perspective, we also corroborate the theoretical relevance of analyzing managerial cognition to understand organizational change [20], [23].

Moreover, this study contributes to the generational differences literature [26], [27]. In particular, we observe that Generations X and Y managers frame digital technologies differently in the context of digital transformation. The present study emphasizes the need to orchestrate figures to deal with generational tensions that stem from different cognitive frames during a digital transition.

From our study, it clearly emerges that there are differences in digital literacy between Generations X and Y managers, with the latter being more prone to mastering digital technologies. On the other side, both generations have a similar understanding

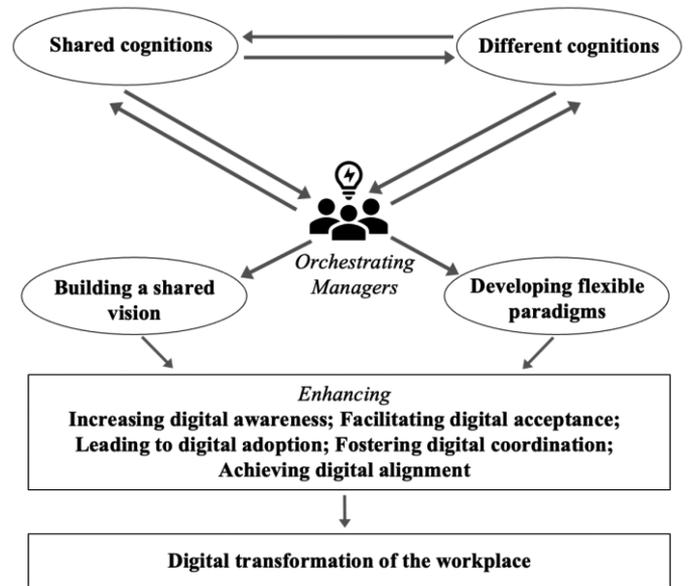


Fig. 2. Interpretative framework.

of the gradual and incremental nature of digital transformation and the importance of long-term adaptation. Both generations value social embeddedness but have different approaches: Generation X places more emphasis on physical relationships, while Generation Y is more absorbed in the digital paradigm. Both generations also have similar views on how integrating multiple working modalities but differ in their perceptions of the impact of digital technologies on hierarchical levels and customer-oriented solutions. Despite these differences, both generations recognize the importance of digital technologies and their role in improving coordination, as well as the role of orchestrating managers in leading a digital transformation.

The data analysis revealed that managers utilize multiple practices to address intergenerational tensions caused by discrepancies in their cognitive frames regarding the digital transition. To successfully achieve a digital transformation, it is a key for managers to address generational tensions within their teams. Also, they have to share their vision and promote flexibility in the workplace.

Fig. 2 represents our interpretative framework and illustrates how digital transformation unfolds from a microfoundational perspective. It is worth mentioning that, as it emerged from our interviews, shared cognition can be considered a smoothing factor in the relationship between intergenerational cognitions, weakening the magnitude of eventual organizational tensions coming from different cognitions about the digital transition. In fact, both Generations X and Y recognize several benefits that stem from the implementation of digital transformation in their workplaces. In such dynamics, orchestrating managers are essential in building a shared vision during the various phases of the digital transformation process and cultivating flexible paradigms inside the organization. In that sense, management ability works as a mediator between the two generations' cognitions and facilitates digital integration. The process culminates in

enhanced digital awareness, acceptance, adoption, coordination improvement, and, overall, greater digital alignment.

For a successful digital transformation, the digital workplace construction should be approached incrementally and gradually, incorporating trial and error, learning from failure, accepting feedback, holding follow-up meetings, and fostering continuous interactions. On the other hand, radical change can have undesired consequences, such as unsolved bottlenecks and organizational breakdowns [52].

By valuing both physical and virtual working environments, employees may perceive digital transformation as an opportunity rather than a limitation [3], leading to increased organizational commitment and identification. This aligns with the literature that indicates that intergenerational organizational commitment tends to decrease in newer generations [27].

To effectively manage the process of digital transformation, it is crucial that managers enhance their knowledge and skills in several key areas. These include digital literacy, digital leadership, digital agility, digital culture, digital collaboration, digital operations, and digital governance [53]. By building these competencies, managers can help the firm effectively leverage new technologies and shape a vision for the future. These competencies serve as a foundation for a successful digital transformation process.

Moreover, managers should also prioritize the development of digital capabilities in their teams and organizations, such as digital literacy, digital skills, digital communication, digital collaboration, digital planning and implementation, and digital security. These capabilities enable the firm to explore innovative opportunities, adapt to technological changes, and improve overall business performance.

It is imperative for managers to recognize the significance of digital transformation and its effect on the sustainability and profitability of their firms. To do so, they must ensure that the firm's digital vision is clear and well-defined and that the digital transformation strategy is in line with the organization's overall mission and goals. By effectively managing the digital transformation process, managers can allow the firm to take advantage of the opportunities offered by digital technologies. This corroborates the relevant practical implications of digital transformation. Indeed, integrating digital technologies into an organization can bring about numerous benefits, including improved efficiency, increased productivity, enhanced collaboration, greater flexibility, increased competitiveness, and the ability to stay competitive in an increasingly digital world [2].

However, it is important to consider the potential implications of such a change. Implementing digital technologies may be costly and require significant upfront investments [33]. The integration of digital technologies may require changes in the workforce, including retraining or hiring employees with new skills or coping with existing tensions within the organization [9], [54]. Some managers and employees may resist the change, especially if they are unfamiliar with the new technologies or feel threatened by them. In order to address these concerns and facilitate a smooth transition, it is important to provide adequate

guidance to such people, effectively orchestrating the digital transition. Thus, our study of digital transformation also paves the way for a better understanding of the role of leadership in driving change and for studies collecting new insights into how technology is changing the nature of work and the skills required to be successful in the workforce.

Indeed, at a practical level, by studying digital transformation from a microfoundational perspective, this study provides new insight into the individual factors that influence the success of digital transformation. This understanding can support the creation of informed strategies and interventions that promote digital literacy, social embeddedness, and integration of multiple working modalities, as well as address complexity and challenges during the transformation process. It can also enable organizations to identify and support the development of necessary skills and capabilities among their employees and to foster a culture and environment conducive to digital transformation. Additionally, by considering the perspectives and experiences of different generations, this study supports managers in tailoring their approach to digital transformation to better meet the needs and expectations of other managers and employees.

In conclusion, the microfoundational approach to studying digital transformation provides valuable insights for organizations seeking to effectively implement and leverage digital technologies in the workplace. By considering the impact on individuals and their behaviors, organizations can better understand and address the challenges and opportunities presented by digital transformation, which will, in turn, lead to more successful and sustainable outcomes.

VI. CONCLUSION

This study aimed to investigate the cognitive framings of Generations X and Y managers during the digital transformation process in a single case study. The mechanisms of management orchestration, together with a shared vision and the development of a flexible paradigm, supported the digital transformation of the workplace.

However, the present study has some limitations. It does not consider the dynamics of interaction between managers and employees, which could be a relevant factor in the digital transformation process. Furthermore, it relies on self-reported data from the managers, which may be subject to biases or subjective interpretations. Additionally, the study did not examine other potential factors that may have influenced the success of the digital transformation process, such as the availability of resources, support from upper management, or external market conditions. Future research should carefully scrutinize these and other variables.

Moreover, the findings of this single case study may not be generalizable to other organizations or contexts, as other firms may have different experiences or use different approaches when implementing digital workplaces. The study also only examined the cognitive framings of two successive generations and did not consider other generations nor the perspectives of other employees or stakeholders, which may limit the scope

of the findings and the ability to draw conclusions about the broader dynamics of the digital transformation process within the organization.

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